

# The Canadian Medical Association Journal

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*With which is incorporated the MONTREAL MEDICAL  
JOURNAL and the MARITIME MEDICAL NEWS*



EDITOR

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# The Canadian Medical Association Journal

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No. 1

## CANADIAN MEDICAL ASSOCIATION

*Annual Meeting in Montreal—June 12th, 13th and 14th, 1923*

SINCE our last issue, considerable progress has been made in the arrangements for the forthcoming Meeting.

Sir Berkeley Moynihan will address the Association on "Medicine in Art," and his address, which will be of general interest, will probably be delivered at an evening reception. Sir William Taylor is to deliver a paper on "Intestinal Obstruction" at one of the afternoon sessions. Sir Robert Jones will give a clinic on "Orthopaedic Surgery," illustrated with cases; while W. J. Mayo's contribution will be on "The Septic Factors in the Great Plagues." These visitors will all participate in the general programme throughout the meeting.

The Programme Committee has arranged for sectional clinics in the following hospitals: Hotel Dieu, Notre Dame, Royal Victoria and Montreal General; Montreal Maternity and Misericorde; St. Justine and Children's Memorial.

Each hospital has its own programme sub-committee. The chairmen of these committees are members of the general Programme Committee and in this way coordination and correlation are obtained.

There will be a special section of the Ophthalmological and Oto-Laryngological Departments, and a number of important visitors from the States and elsewhere are expected.

In the afternoon sessions, the papers will be delivered extemporaneously, *i.e.*, instead of the usual custom of reading papers, contributors will be invited to present their communications in an abstracted form with a time limit of ten or fifteen minutes. This will enable every contributor to gain a hearing. Papers so delivered will be published *in extenso* in the *Journal*.

A Programme on Special Subjects is being arranged, and guests from all over the country will be invited to contribute, so that a systematic discussion of the subjects in hand may take place.

The Committee on Entertainment has not been idle. A banquet will take place on the second evening of the meeting in the large banqueting hall of the Mount Royal Hotel, where more than 600 guests can find ample accommodation. It is proposed to entertain the ladies at the same time at a separate banquet, or it may be that the banquet itself will be open to ladies as well. It is hoped that many of the members will be accompanied by ladies, for whom ample entertainment will be provided. Arrangements are being made for luncheons and receptions at the Hunt Club and in various private houses, and the Royal Montreal Golf Club will be open to those who wish to make use of it.

Attention is again drawn to the wonderful accommodation provided for exhibitors. The hall, which is 170 ft. x 50 ft., is flooded with light and affords magnificent space for those who wish to make their exhibits attractive.

Registration of members takes place in the centre of this hall, so that everyone attending the convention will come in close contact with the exhibits.

Daily lunches are provided in a separate hall of the hotel, with accommodation for at least 400, so that the members may thus meet together, and in this way a full attendance will be secured for transaction of business and for short addresses during that time.

It is anticipated that at least 800 visitors will attend the meeting, which should exceed all former records.

## MEDICAL EDUCATION AND THE ONTARIO MEDICAL ASSOCIATION

J. HEURNER MULLIN, M.D.

*Hamilton*

I HAVE been instructed by our President to write a short account of the activities of the Committee on Education, together with an outline of its possible scope and function. This Committee was originally created for the purpose of providing university post-graduate instruction for the members of the County Medical Societies at their places of meeting; although the name has been changed, the activities have, almost entirely, been of this character. During my term of office, it was repeatedly brought to my notice how much the work of the various committees interlocked; and how important it was, in considering any one problem, to give due regard to all others which in any way were affected by, or in any way related to it. Therefore, before proceeding with my story, I would request each reader to ask himself a few questions, and, from his own viewpoint to supply the answers which appear to him to be satisfactory.

Why does the profession require post-graduate education? Are we, as a profession, prepared to supply the best possible service to the public as a whole, and to those whom we meet individually in our daily work? What is meant by the best medical service? Should we discuss merely the quality of the service, or extend this question to cover the type or plan for providing this service, both to individuals and to the community as a whole? Do we agree that, in the future, medical practice will only require specialists, surgeons, private group clinics, and public health officials? Are we to sit still and watch the efforts of those who are without our ranks, when they attempt to prevent distress when it affects one or threatens the whole community? Are we, as members of a group, so intensely individualistic in our instincts that we cannot be organized in our own interests, or for that service which we must provide for all the other members of society? Or will the medical profession rise to the occasion and take some real interest in revising all of our methods, and, by organization, make collective action more powerful for good as well as for protection?

It is evident that on these and other questions which might properly be presented, much thought should be given before decisions can be reached. I am sure that all those who have given, or are willing to give these matters any extensive study, will eventually agree that, no matter what changes may come, no system will be developed which will satisfactorily do the work unless we maintain that individual relationship between the patient and his doctor, which has been recognized as a most desirable fundamental in British medicine for many generations. Many will agree that even the preventive side of medicine should include the foregoing principle, and that, in the final solution, it will be found impossible to completely separate the preventive from the curative side.

The best British schools have long recognized the first necessity of graduating good general men, and their curricula are based on this principle. Those graduates who wish to become expert in any department spend years of post-graduate study before announcing themselves as consultants.

Our profession in Ontario, through the Ontario Medical Association, should at least be in a position to give some guarantee to the public that we are doing our utmost to keep up to a high standard the quality of service which our individual members may be expected to supply on demand. It must be our first duty to assist in the development of the man in general practice. It is now several years since one of our members, Dr. McKenzie, of Alliston, very properly brought the subject of post-graduate education to the attention of the Royal Commission on Medical Practice, and thus publicly presented the necessity for taking into account the State's obligation to see that at least a greater opportunity than at that time existed should be given to graduates in practice to refresh their minds by some form of post-graduate instruction and study. No doubt it had occurred to many that much better opportunities were at that date offered to the lay public by means of the university extension courses,



in the arts and sciences, and in literature; the State had also realized the necessity for posting the farmer on how best to look after his cattle, but had done little to keep the medical profession abreast of the times in the interest of the great masses of the public, the human family in this fair province.

The first Committee on Education of the Ontario Medical Association with Dr. McKenzie as Chairman, took active steps to supply the need, and in its pioneer efforts, as presented in their first report, we have the foundation of what must be a complete revolution in this our viewpoint regarding the duty of the university in things medical to its graduates, and, through them, to the community at large in various parts of the province. The three universities in the province were invited to assist, and, in addition, other prominent and able members of the profession.

No doubt many of our members are sufficiently familiar with our plan, the recent growth of the movement, and last year's record under the auspices of the Ontario Medical Association. We have reason to believe that, with due regard to population, this record has not been equalled in any other part of the British Empire, or in any one of the United States. For the benefit of those who lack this information, this short account is now presented. A schedule was prepared giving a list of topics, and these, from all sources, were listed under various department headings. This schedule was mailed to all the profession in Ontario, residing outside of Toronto. During the past year, with the splendid co-operation of the Department of Health of Ontario, and with the generous contribution of \$5,000.00 from the Ontario Red Cross Society, it was made possible for our Directors to offer to pay from the Association funds, the expenses of travel and a nominal honorarium for six speakers sent to each County Society. During the coming year, owing to the increase of our provincial fee and the continued Red Cross support, it will be possible to send eight speakers on the same basis.

The various County and local Societies were encouraged to take advantage of this schedule in augmenting their regular programmes, or in providing special courses. These could be arranged for according to the following plans: (A) Individual lectures forming the main part of local society meetings. (B) Individual lectures apart from regular society meetings. (C)

Lectures in series. Each county was permitted to make its own selection as to topics and plans. By this method a truly democratic spirit was maintained and local societies were encouraged to manage their own affairs.

The schedule was printed without names attached to various topics for very obvious reasons; but the names of the proposed lecturers were made readily accessible to the secretary of any society, after the topic had been selected. During the past year, a total number of ninety-nine speakers were made available for the purpose of the schedule, each speaker having indicated to our central office the number of times he was willing to go out during the year.

The following is a list of some of the popular subjects, the figure showing the number of times selected: "High Blood Pressure", 18; "The Pathology of Gall Bladder and Bile Ducts, and its Relation to the Clinical Manifestations of Disease, and the Surgical Treatment indicated", 9; "Obstetrical Injuries and their After-results, with special reference to Prevention", 8; "The Diagnosis, Prognosis and Treatment of Cardiac Irregularities", 8; "The Differential Diagnosis of Pain in the Back", 8; "The Diagnosis and Treatment of Goitre", 8; "The Diagnosis and Treatment of the Commoner Skin Affections", 7; "Inflammatory Diseases of the Pelvic Organs", 6; "The Interpretation of the Signs and Symptoms of Chronic Gastro-intestinal Disease", 5; "The Surgical Emergencies of General Practice", 5; "Symptomatology of Pelvic Disease", 5;

In addition to the above, a number of lectures were given under the auspices of the Provincial Board of Health in various parts of the province without any charge being made on the local organizations. We wish to acknowledge the whole-hearted support of the Chief Officer of Health of the Province, which support made these lectures possible. The following chart shows to what extent the opportunity was used; namely, 186 individual lectures were given to thirty-one County Societies. In addition, there were nine Counsellor District Meetings, at which fifty-five speakers assisted, making a grand total of 231 speakers sent out under the auspices of our Provincial Association.

The chart which follows show that the number of lectures requested by a County Society bears little, if any, relation to the number of the medical population, but rather should be taken as an index of the activity of the executive officers of each society. We have no complete information re-

garding the actual number who attended the lectures at each County Meeting. The percentage of the number who have recognized the advantage of being members in the Ontario Medical Association is listed as a matter of record. This should certainly be increased—except in the case of Thunder Bay (100%) as the advantages of the provincial organization become better appreciated. Nineteen other counties are not listed; either these are not organized, their executive officers are asleep, or they have taken other methods of supplying educational facilities for their members, independent of our central office.

The cities of London and Toronto have each of them an active Academy of Medicine whose programme is not included. The local society of Kingston is only partially shown. Each of these cities has a University with a Medical Faculty, and it would be impossible to estimate here the benefits which they distribute to those who are favoured by such environment.

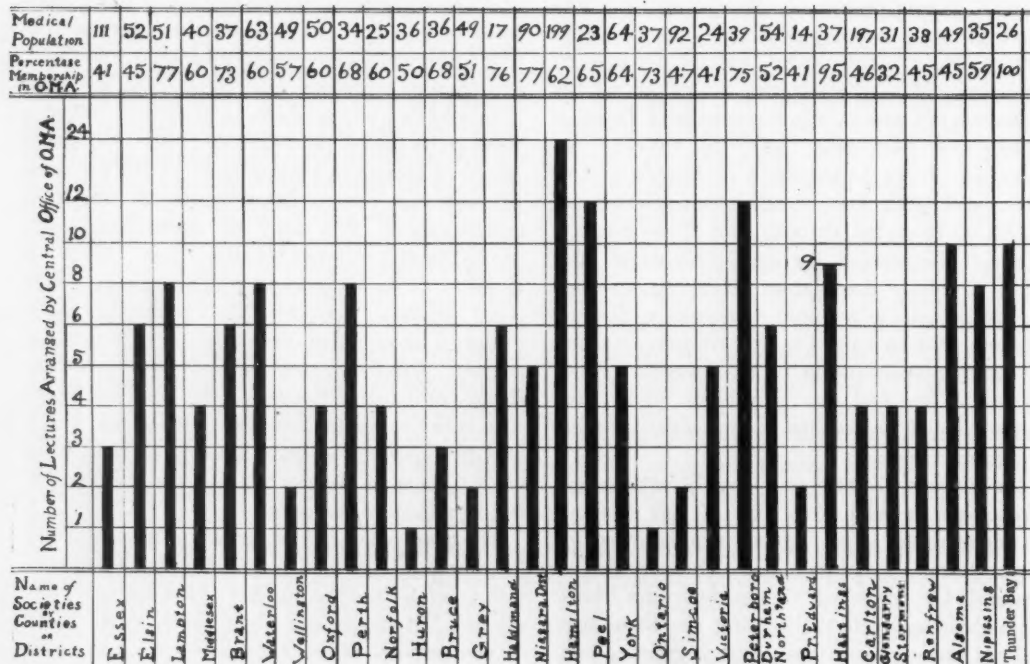
In the city of Hamilton, there is an active Medical Society, and additional courses were independently arranged. A total of fifty-five lectures during the year stands to its credit. Here, and probably in the case of other city medical societies, the programme of the local society for its regular meetings, was arranged

quite separately from the stated post-graduate courses.

But the record is not enough; changes are rapidly taking place in medical thought and practice, and along with this, the complete question of medical service to both the sick and the well must receive our attention. The earliest advocates of State Medicine based their chief argument on the presumption that the public does not get the best kind of service, which can be provided if these advances are to be made available for all. In this they were probably right; but what about the remedy?

In preparation for the work of the coming year, the schedule has been completely revised. Each university Medical Faculty has been requested to revise its list of topics. In addition to this, all the members have been circularized and requested to offer to read papers which bear the endorsement of their own local society.

Each County Society in addition to those lectures which are supplied free of cost from the central fund, should arrange for other speakers in large numbers. If these were grouped together in a definite post-graduate course under the local Committee on Education, and a nominal charge levied on those who attend, it should not be difficult to finance their programmes. Some



years ago, a group of twenty-five dentists in Hamilton invested \$3,000.00 in one year; they found that it paid, and have had similar courses in the later years. Surely the medical profession can do likewise.

The various plans which have been elaborated are here briefly discussed for the benefit of those who wish to revise or extend their scope of activities. Any plan may be modified according to the wishes of the local group.

(A) *Individual lectures forming the main part of local society meetings:* This plan has been in operation in the past, and constitutes the procedure adopted by a large majority of the county societies. Those societies that wish to continue this method should assist their officers by supplying other features on the programme, possibly co-related with the subject; and in every case, presentation of pathological specimens and clinical histories should be encouraged.

(B) *Individual lectures apart from regular society meetings:* Under this plan, the members in the county societies who wish to form a group for the purpose of taking this post-graduate instruction, arrange for meetings apart from the dates of regular meetings. The various topics and speakers for single lectures on various subjects are selected according to their wishes.

(C) *Lectures in series:* This plan will almost certainly be accepted, sooner or later, by all those who have tried the previous method. Three or more lectures properly correlated as to material and in proper sequence would be given; fully sufficient to cover any particular field.

(D) *Team work:* This plan has been carried out in the State of North Carolina, and can be arranged by having a team of men who would tour the province according to a convenient method planned by the central office. Each team could spend one or more days in one town and then move on. On the other hand, each local society could ask for any team they specially desire. In each town, there would be held both morning and afternoon sessions, and, if possible, clinics on cases which have been previously worked up by the local group.

(E) *Summer Camps:* This plan has been suggested with the object of including many of the features described above, and covering the field of study in a more intensive manner. A suitable site would be chosen in one of our northern holiday districts, and a more or less permanent camp set up in the midst of the woods adjoining one of the inland lakes or rivers. This would

be opened to groups of practitioners for periods of two weeks or more, and might be further developed to include the families of the groups. In this way, members would be able to avail themselves of the opportunity of combining rest with pleasure and a limited amount of medical work. Definite lecture hours would be arranged, and the programmes prepared according to the expressed wishes of those participating.

(F) *The Seminar Method:* This method would be confined to our larger centres, where a small group of men wished to cover a certain amount of the literature on a given subject. In this case the same lecturer would go at more or less frequent intervals. He would assume the position of leader of study. Each of the members of the group would be expected to play an equal part in handling his portion of the literature to be covered. Round table discussion would add the feature of informality and would increase the interest. This method would, of course, be limited and would require regular attention on the part of all the individuals in the group.

Whether or not other plans may be suggested, the future will decide. With all of the above plans, every possible effort should be made to enlarge the scope of the clinical side, and the practical application of the topics presented. The directors of the Ontario Medical Association have purchased several view-boxes and lanterns for use where these are not available. The question of suitable blackboards with various coloured chalks, etc., should certainly be a local obligation.

The following chart indicates that the committee, with the cooperation of the universities and others, has been able to increase the number of lectures which are available and from which each county society may make its selection.

Number of Topics in Various Departments

Department	1920-21	1922-23
Internal Medicine.....	47	84
Paediatrics.....	12	18
Surgery.....	32	61
Obstetrics and Gynaecology.	10	27
Therapeutics and Pharmacology.....	14	19
Hygiene and Preventive Medicine.....	5	14
Oto-Laryngology.....	7	13
Pathology.....	8	20
Physiology and Biochemistry	20	21
Radiology.....	4	22
Miscellaneous.....	0	8
Total.....	159	307

We have observed the conditions which have arisen across the Border, where in many states

they find the cities overcrowded with doctors while in some rural communities upon the death or removal of an old practitioner it has been impossible to attract the younger men, fresh from their academic experiences. Should we not, therefore, especially interest ourselves in the man in rural practice, and assist in maintaining his interest in modern medical affairs? Several who have had the privileges of attending our District Meetings have noted the high average of ability exhibited by the papers read, and the splendid type of the discussion. While some lack the familiarity with modern methods, many have individually made up for this, in large part, by the opportunities of a wide and varied experience. Their judgment in many cases would put some of our city brethren to shame.

Much is being done to make life easier for all classes in our rural communities; good roads, motors, telephones, electricity for light and power, moving pictures and the radio; but what about improvement in medical facilities? Where are the laboratories and small-community hospitals that would give those citizens who produce

the bulk of our wealth, the bare necessities in serious emergencies? Our educational programme has compelled the members to do some thinking. Already our members in various parts of the province are asking for these laboratories and hospital facilities. Should these things become realities in large numbers and be intelligently made use of, our teachers will be more fully repaid for their labours than they can possibly expect to be from the modest honorarium it is now possible to offer.

In closing, may I express, on behalf of the Committee, appreciation and gratitude to those teachers from our universities and others of the profession, many of whom, at great sacrifice of time and energy, have gone throughout the province and assisted in making the work under this schedule possible. The executive work has been small indeed, compared with the sum total of the efforts of the speakers, whose ever-ready spirit of cooperation, has added pleasure to the work entailed in carrying out all the necessary arrangements.

## THE TREATMENT OF NEPHRITIS

EDWARD H. MASON, M.D.

*Montreal*

TO anyone practicing internal medicine, the extensiveness of nephritis is well known. In the U. S. Bureau of Census reports for 1916, it stood third in mortality statistics, being preceded by pulmonary tuberculosis and organic heart disease only. Most Insurance companies find that Bright's disease ranks fourth as a cause of death, and when we consider that these figures do not include the majority of cases of acute nephritis, its importance can hardly be over-estimated.

Nephritis is in some respects a misnomer. "Itis," strictly speaking, implies inflammation, thereby including all the pyogenic diseases of the kidneys. Again, many of the commoner non-suppurative kidney lesions are degenerative, rather than productive, but due to its long usage

and general understanding, it is better to retain the term nephritis, thinking of it as a non-suppurative, proliferative or degenerative lesion of the kidney substance.

Classification of nephritis has always been a stumbling block. Shall it have an etiological, pathological, or functional basis? One based upon etiological principles would, perhaps, be the most satisfactory, if we knew more of the causes of nephritis, but at present it is impossible. Due to our frequent inability to correlate pathological and clinical findings, a classification based upon morbid histology has never won acceptance with the clinician. This is largely due to the extensive structural alteration that takes place in chronic disease, leaving little resemblance to the original altered histology. The remaining classification is related to function, the one thing that lends an aspect to each case, that can be

\*Paper read before Meeting of Montreal Medical Chirurgical Society, October 20th, 1922.



determined clinically with the aid of the laboratory, and after all, function is of the greatest importance to the patient. It determines life or death.

Until we understand more about nephritis, it is better to keep our classification simple, based upon functional principles, a guide and a means of indexing each case in our clinical work. From this standpoint, such a division, as suggested by Dr. Christian, is satisfactory.

- 1.—Acute Nephritis.
- 2.—Chronic Nephritis.
  - (a) with oedema;
  - (b) with hypertension;
  - (c) mixed.
- 3.—Essential Hypertension, (may progress into chronic nephritis).
- 4.—Renal Arteriosclerosis, (progressing into chronic nephritis).

Such a grouping is quite clear, I think and needs very little explanation, but we must recognize that a case may pass from one group into another with progress of the disease process. For example: originally there may be an acute nephritis, passing with the years, as so frequently happens, into a chronic nephritis with oedema, later becoming a mixed type manifesting both oedema and high blood pressure. With still further constriction of the kidneys, the oedema largely disappears, hypertension being the outstanding feature.

A good example of the progress of a nephritic lesion is shown in Chart I, which depicts the findings in a male, aged eighteen years, admitted to the hospital in May 1920. Upon admission the diagnosis was chronic parenchymatous nephritis with extreme oedema, the urine being characteristic, with no retention of non-protein nitrogen in the blood. Further, the blood pressure was low and there were no retinal changes. A few months later all the oedema had disappeared and the true weight of the patient was 36 kg., being only a

little more than 50% of that upon admission. In two and one half years' time, the picture had quite changed. Now (October 1922) there is marked inability to concentrate, albumen and casts have largely disappeared, and there is marked retention of non-protein nitrogen in the blood. Also the blood pressure shows a tendency to rise, but the fundi still remain negative.

**Renal Functional Tests.** Renal functional tests have a definite value in the understanding and treatment of nephritis. They tell us what the kidney can do; in that way helping us to intelligently regulate the intake of the patient. The best tests are, (1) The phthalein test for the determination of the total kidney function. (2) The nephritic test meal, giving information as to the quantity of night urine, variation of specific gravity, and the ability to concentrate nitrogen at night, and (3) The estimation of the non-protein bodies in the blood. These tests have their greatest value when considered together and in conjunction with the history and physical examination of the case. Repeated at intervals they give information relative to the change in function. Again they help to individualize each case, so important for its proper treatment.

**Treatment.** The treatment of acute and chronic nephritis is based upon one principle. Physiological rest, both of the body as a whole, and of the kidney in particular, is the goal aimed at, hoping, in the acute cases for repair and in the chronic cases, for arrest of the disease process. In dealing with the details of the treatment, it will be clearer to consider acute and chronic nephritis separately.

1.—*Acute Nephritis:* Here we are dealing with an acute inflammation of the structural secreting unit of the kidney, usually toxic in nature. The following procedure is usually advisable. (a) Rest in bed until red blood cells disappear from the urine; preferably until casts and albumen disappear as well. Hope should be

CHART I

Date	Weight	Urine			Blood		Phthalein	Edema	Blood Pressure	Fundi
		Sp. Gr.	Albumen	Casts	Urea	Creatinine				
	Kg.	Max. Conc.			Gm. per litre	Mgm. per 100 cc.	2 Hrs.		Mm. Hg.	
1920—May...	69	1034	++++	+++	0.3	1.0	20	++++	100/80	Negative
1921—Jan...	44	1020	+++	+	0.6	2.1	10	+	120/85	"
1922—May...	60	1016	++	+	0.9	3.5	7	+	115/85	"
1922—Oct....	57	1012	+	few	1.1	5.5	ft. trace	+	135/85	"

entertained for at least four months that the acute condition will not progress into a chronic one. (b) Activity of bowels and skin. (c) Elimination of foci of infection, which not infrequently have a definite etiological relation to the inflammation; (such as infected tonsils, alveolar abscesses, or other pus pockets). (d) Diet: During the acute stage, a milk diet is probably the best, 800 to 1000 cc. of milk per day, but this should not be kept up too long as it is subcaloric. Gradually increase to 1800-2000 calories keeping the protein and salt low. (Protein 30 to 40 grams.). Such a diet can be made up from cream, butter, bread, sugar, potato, oatmeal, vegetables and fruit, the calories being given largely in the form of carbohydrates and fat. From this diet one can increase the protein gradually up to 60 grams. per day, but protein intakes above that level should not be allowed until all evidences of nephritis have disappeared. Salt restriction does not need to be so severe with convalescence. (e) Fluid: As it is unusual to have extreme oedema in acute nephritis a fluid intake of from 1,000 to 1500 cc. is usually satisfactory. This can be increased to 2000 cc. later if desired. (f) Surgical treatment in acute nephritis finds no place,

except in certain cases of complete anuria in children, where decapsulation might be considered.

Such is a general outline of treatment in acute nephritis. Each case, however, must be individualized and this can best be done through functional studies. Thereby the finer indications can be treated; also as the case improves, functional studies are our best guide in judging the amount of restoration of kidney structure, and accordingly of permissible dietetic increases.

Chart II shows the satisfactory improvement of a case of acute nephritis in a boy of five years, and 17kg. weight. The etiology was doubtful.

To understand acute nephritis, it is necessary to follow the case over a long period of time. Such a case is shown in Chart III, a male, aged fifty-five years, admitted to the hospital in November, 1916, with acute nephritis. The results show complete restoration of function.

2.—*Chronic Nephritis*: The principles of affording physiological rest to the kidney applies no less in chronic nephritis, and especially in acute exacerbations of a chronic lesion, as it is at these times that the lesion tends to progress more rapidly. A proper study of the case includes the

CHART II.

Date	Intake		Urine			Blood Urea	Phthalein
	Protein	Total Calories	Albumen	Casts	R. B. Cells		
	Gm					Gm. per Litre	2 Hrs.
1922 May 27	33	712	++++	++	++		
May 30	35	860	+++	+	+		
June 9	50	1143	+	0	0		
June 20	50	1143	Trace	Few	0		
June 30	60	1223	Faint Trace	0	0	0.3	85

CHART III.

Date	Intake Protein	Urine				Blood Urea	Phthalein	Edema	Blood Pressure
		Max. Conc.	Albumen	Cast	R. B. Cells				
	Gm.					Gm. per litre	2 Hrs.		Mm. Hg.
1916—Nov.	Low	1015	++	++	+	0.86	63	Slight	185/110
Dec. 6	Low	1017	+	+	0	1.25	Trace	0	155/100
1917—Jan.	Low	1025	Trace	Few	0	0.40	42	0	150/90
1918—Jan.	Restricted	1027	Trace	0	0	0.38	50	0	135/80
1919—Feb.	Restricted	1030	+	0	0	0.39	52	0	130/80
1920—July	Restricted	1032	Trace	0	0	0.38	60	0	120/80
1922—Oct.	Restricted	1035	Faint Trace	0	0	0.30	68	0	115/77



thorough determination of kidney function, repeated at intervals, and upon the results obtained our treatment must be largely based. Oedema and salt retention indicate the restriction of fluid and salt. Retention of non-protein nitrogen in the blood should guide us in our protein administration. General principles as outlined under acute nephritis apply in chronic. It is important that, unless we are dealing with an acute exacerbation we should make use of fat and carbohydrates, and the diet should not be subcaloric. These are burned to  $\text{CO}_2$  and water in the body, and their waste products throw no strain upon the kidney. Above all in chronic nephritis we must individualize as each case has its own peculiarities. By attending to many of the minor disorders, a better chance is given for repair to the kidney.

**Diuretics:** Diuretics in nephritis are altogether too widely used. Careful studies, largely from the clinic of Dr. Christian, have shown that in few cases of true nephritis have they been of any value. There may be a temporary stimulation of function, but that is followed by a marked slump with the result that the case is worse off than before. In acute nephritis there is little occasion to use a diuretic except to tide over an emergency. In chronic nephritis one is more frequently tempted. Water is our mildest diuretic and in certain cases may be justly tried, as there is no proof that it is easier for the kidney to eliminate substances in concentrated than in dilute form. In our experience the most satisfactory results have been obtained from the use of glucose intravenously to the point of slight glycosuria. This has been given in a 20% solution, 300 cc. twice a day. We believe that glucose has a definite value in meeting an emergency, especially in those kidneys where there is a marked depression of kidney function with but little altered anatomical structure. In the more chronic types, with extensive pathological altera-

tion, temporary improvement can undoubtedly be obtained, but the fatal termination is only delayed.

A good example of the value of glucose intravenously to meet an emergency is shown in Chart IV, depicting the results obtained in a male, aged sixty-nine years, admitted to the hospital with seven days complete anuria.

**Acidosis:** As is well known many cases of nephritis, especially those of the advanced chronic type, develop a marked acidosis, it being in some cases the immediate cause of death. The cause of this acidosis is due in part to the inability of the kidney to eliminate the normal amount of acid phosphate ( $\text{NaH}_2\text{PO}_4$ ), thereby retaining in the blood excess of phosphates which deplete the body of its sodium reserve. This results in the lowering of the blood  $\text{CO}_2$ . The symptoms associated with this acidosis are mainly respiratory, in the form of deep laboured breathing, and this can be promptly abolished by treatment. This is done by supplying a base to the body, usually sodium bicarbonate, best given by mouth or by rectum, and as a last resort intravenously. Its administration should be carefully controlled, preferably by the blood  $\text{CO}_2$  or by the urinary acidity, as with poorly functioning kidneys one may easily produce an alkalosis. Such an acidosis was found in a case of chronic nephritis admitted with a blood  $\text{CO}_2$  volume percentage of 17.5, and 11.7 mgm. of inorganic phosphates (as P.) per 100 cc. After 60 gm. of sodium bicarbonate had been given the  $\text{CO}_2$  had risen to 67 volume percentage and the phosphates had fallen to 5.7 mgm. per 100 cc.

**Edema:** Edema is one of the most interesting and complicated manifestations of nephritis; of little importance in the acute types, it over-shadows the picture in many of the chronic cases. Not uncommonly it increases the weight

CHART IV.

Date	Fluid		Urine		Glucose Intravenously
	Intake	Output	Total N.	Glucose	
	cc	cc	Gm.	Gm.	Gm.
1922					
Aug. 4	1390	0	0	0	90
Aug. 5	2520	1545	5.5	4.6	150
Aug. 6	4630	3910	15.1	7.9	152
Aug. 7	4300	4410+	16.8+	3.6+	180
Aug. 8	4650	2200+	8.5+	7.6+	180

of the patient 100%. In the past we have thought oedema to have a relation to the retention of sodium chloride in the body, either in the blood stream or in the tissues. Frequently it appears to be due to the retention of sodium chloride by the tissues as the actual plasma chlorides fall to very low values, considerably below the normal threshold of 5.62 grams. per litre concentration. With the return of the salt into the blood stream the diuresis commences. Present thought tends towards the opinion that oedema is secondary to the balance of ionized radicles between blood and tissue lymph, rather than to the total salt concentration. Our treatment of oedema is poor. We usually restrict fluid and salt. In some cases improvement is immediate, but such is not the rule. Chart V shows the average result obtained with our present method of treating oedema in a bad case of chronic nephritis, aged eighteen years.

**Nephrosis:** A few years ago Epstein described a type of chronic nephritis associated with marked oedema, and scanty concentrated urine containing an abundance of casts and albumen, low blood pressure, with an ability to handle nitrogen end products in a normal manner. These cases showed an altered blood protein ratio, albumen to globulin, with a high blood cholesterol. Epstein thought that the condition was a general systemic disease, the kidney changes being secondary and

degenerative in nature. He used the term nephrosis and advised treatment to consist of a high protein diet with transfusions. The oedema was thought to be due to the altered blood proteins acting in some way through their osmotic pressure. How this could be is difficult to imagine as the total normal blood proteins only exert an osmotic pressure of 30 to 32 mm. Hg.

A case falling into this type has been studied in our clinic since May, 1920. Data have been obtained showing that the oedema had little relation to the altered blood proteins. This is well shown in Chart VI, the basic weight of the patient being 36 kg. With the loss of the extreme oedema there was practically no alteration in the blood proteins, the globulin fraction still remaining in excess of the albumen.

**Conclusions:** The question of nephritis is a difficult one. In many cases we are acquiring data over short periods of time, but for the comprehensive understanding of the disease data must be collected over long periods in the same case. How many of us know what percentage of our cases of acute nephritis pass into a chronic condition? We see too many end results.

Other problems that are unsolved are the following: the effect of various amounts of protein in nephritis over long consecutive periods; the effect of various kinds of protein, animal and vegetable; effect of various fluid intakes; the exact

CHART V.

Date	Weight	Intake				Urine			Blood		Phthalein
		Protein	Total Calories	Fluid	Salt	Volume	Sp. Gr.	Albumen	Urea	Chlorides	
	Kg.	Gm.		cc	Gm.	cc		Gm. per litre			2 Hrs
1922 Jan. 28	55	32	870	1000	0	500	1026	12	0.30	6.22	31
Feb. 18	61	33	764	1000	0	400	1036	15	0.22	5.75	40
April 1	36	50	1400	1500	0	1200	1013	0.2	0.20	6.00	52
April 30	39	52	1400	1500	0	1100	1012	+	0.20	6.15	57

CHART VI

Date	Weight	Blood Proteins		Blood	
		Albumen	Globulin	Chlorides	Urea
	Kg.	%	%	Gm. per litre	Gm. per litre
1920—May 21.....	69	1.40	2.08	5.80	0.39
June 20.....	61	1.71	3.29	6.50	0.34
July 20.....	41	2.76	3.42	6.55	0.24
Aug. 1.....	36	1.69	2.78	5.85	0.38

nature of acidosis in nephritis; and the big question of oedema.

Some of these problems will be solved, but I think that an aiding factor will be a closer union with chemists and physicists in our hospitals. We clinicians are not physical chemists, but we must employ men with such training if we hope to forge ahead towards the truth.

#### DISCUSSION

*Dr. Rabinovitch:*—There are two outstanding facts with regard to nephritis. One is—there can be no doubt—that by the application of such methods as Dr. Mason has demonstrated, a decided advance has been made in the study of the disease. The other is that the consensus of clinical opinion is that no great advance has been made in the treatment. How can we reconcile these facts? To treat any disease really successfully we must have some knowledge of the factors which produce, modify and control that disease. Just how much do we know of any of these factors with regard to nephritis? Our interpretations of the results of the chemical analysis of the blood in the so-called kidney function tests are based on the principle that when the kidney becomes insufficiently able to excrete any product of metabolism this product accumulates in the blood and the extent of this accumulation or the rate of its excretion is a measure of the degree of impairment in the kidney function.

If we really consider just what is happening I think we will find that these generalizations do not hold. What we are measuring by means of these tests is not necessarily kidney function alone. In the majority of cases we are attributing a certain defect in elimination of a substance to the kidney when we have more evidence to believe that the kidney has really little to do with the retention of that product. The kidney lesion appears to be a local manifestation associated with some general body disturbance, but because it is the more prominent and apparent clinical observation, we have classified it as a clinical entity and spent all our efforts in the study of that one phenomenon.

We attribute to the kidney an undue amount of discriminating power by saying that as the blood passes through it, it picks up different substances, a little of this and a little more of that. Is it not more reasonable to consider that what is excreted is brought to the kidney in such a physico-chemical state that it can be excreted. There is much more evidence in favour of the latter. For example, we say that albuminuria is due to an increased permeability of the kidney cells owing to their injury. If this is so, why will egg albumin, casein, haemoglobin and gelatin when introduced into the blood stream of a normal animal and therefore with normal kidneys, be excreted? Is it not rather that the albumin introduced exists in a different physical state than the albumin of the blood? Again we say that owing to a certain kidney lesion there is a salt and water retention. Why blame the kidney for this? We look upon the individual kidney cell as a living membrane. Do we know of any living membrane that is absolutely impermeable to water? Even a filter made of coagulated egg albumin will filter water and salt. If the living membrane has been injured in nephritis and owing to its injury such large particles as the protein molecule can pass through, why should not the insignificantly small salt molecule or ion pass through? We have striking examples to demonstrate this point. We have at present a patient in the hospital in whom, owing to a large amount of oedema, we have had an opportunity of studying the state of the salt in the blood and in the subcutaneous tissue fluids. These exist in two entirely different physical states and this difference is quite sufficient to account for the oedema, without attributing it to the inability on the part of the kidney to excrete salt.

A small kidney of an advanced chronic interstitial nephritis, weighing about 15 gms. instead of the normal

150 grams and resisting section like a piece of leather, and, according to the pathologist showing marked degeneration in its various tissues, will not only allow salt to pass through—for this type of nephritis is not associated with oedema—but will also allow water to pass through with such ease that the patient actually has a polyuria. We attribute to the kidney a glandular function. Comparing this organ with other glandular structures in the body, we find it not only differs fundamentally in origin, but also in function. It originates from mesoderm; other glands either originate from ecto-derm or endo-derm. It has the same origin as bone and connective tissue. In spite of the work of physiologists we cannot but believe that the excretion of urine is for the most part physical, since unlike the excretion of other glands, so much depends upon the blood pressure. For example, there are some glands which will not only keep on excreting at a lower pressure than that of the blood, but may have a greater internal pressure than the blood itself. The most striking example is that the difference in pressure between both sides of the capsule is just sufficient to overcome the osmotic pressure of the salts and colloids of the blood. The most we can say of our so-called kidney function tests to-day is that by chemical analysis of the blood and by analysis of the urine following the ingestion of substances we observe certain phenomena associated with slight and advanced lesions of the kidney. These are not necessarily caused by, but are associated with, the kidney lesions. This does not in any way alter their clinical value. The big factor that will influence excretion is probably the physico-chemical state of substances in the body fluids and the blood. A kidney lesion is a local manifestation of some general disturbance of the physico-chemical state of the body tissues. Unfortunately it is the most prominent phenomenon and all our efforts have been spent in studying that phenomenon.

With reference to the acidosis. Dr. Mason has emphasized an important point—that the acidosis in nephritis may be so severe as to be the actual cause of death. It is, however, difficult to accept the view as to the nature of this acidosis as suggested by Dr. Mason, and generally accepted to-day. We say that it is due to a retention of acids owing to the inability on the part of the kidney to eliminate the acids formed during normal metabolism. The amount of phosphorus Dr. Mason found in his case, when calculated in terms of free phosphoric acid, would not be nearly sufficient to account for the neutralization of the amount of base found as shown by his figures which represent the lowering of the  $\text{CO}_2$  combining power of the blood. A study of the body excretion of acids in the normal individual and the nephritic by the method outlined by Leathes shows definitely that the nephritic kidney is not unable to excrete an acid urine. How then are we to explain the acidosis, which is definite? Benedict and Nash have calculated the actual amount of ammonia that could possibly pass through the kidney in twenty-four hours and the total amount is insufficient to explain that usually found in cases of acidosis. In other words, it appears to be a function of the kidney to produce ammonia. If we accept this view, the defective neutralization of acids in nephritis is more readily understood. It is not due to a retention of acids, but due to an inability on the part of the diseased kidney to produce sufficient ammonia for neutralization purposes.

*Dr. Rhea:*—Dr. Mason's very interesting paper would have shocked Richard Bright as well as those pathologists whose interest in kidney lesions centres about the gross and the microscopical picture. Dr. Mason has said nothing about classification of kidney lesions. He has dealt only with the functional capacity of the kidney cells. In this approach I think that he is working in the right direction because in dealing with the working capacity of a living tissue, he is able to make estimations not once but over long periods of time. We have for some time been interested in an attempt to correlate the gross and the microscopical lesions in a diseased kidney with the clinical signs and symptoms; up to the present time we have not been much encouraged. I know of no way that we can with assurance measure by means of the micro-



scope delicate bio-chemical and physical potentialities. I cannot with assurance differentiate between injuries which temporarily interfere with function and those that will lead to death. Until we are able to do this the correlation between pathological findings and clinical symptoms will be unsatisfactory.

I have only comparatively recently had this impressed upon me. I was showing the kidneys from a patient, which had all the gross characters of a diffuse chronic nephritis and ventured the opinion that the patient had probably died in uremia. When the post mortem was complete we found frank lobar pneumonia, and when the records of the kidney function tests were looked up they were found to be normal. In this case though her kidneys were damaged she still had a sufficient amount left to permit their functioning.

After all, from the clinical view-point, it is not so much the extent of the damage that has been done, but to what degree the remaining tubules can function.

Work along the lines presented in Dr. Mason's paper not only helps to elucidate abnormal processes but brings hope and encouragement to the patient.

**Dr. Martin:**—One thing that strikes me about Dr. Mason's paper is that he has definitely shown that certain laboratory methods give well-defined results; and that exact limitation of the amount of protein and salt intake yields successful results in treatment. Careful dietetic measures controlled in the chemical laboratories are well worth while, and a great deal is to be said for systematic laboratory work.

In recent years our views in reference to many points in nephritis have considerably altered. For instance, we do not now lay so much stress upon the amount of albumin found in the urine as we formerly did; while on the other hand the importance of making repeated estimates of the specific gravity is being realized. This latter is often a fair indication of the progress of renal disease. Again, there is a widespread impression that a milk diet is the only proper diet in the acute and subacute forms of nephritis. Such a view is, of course, incorrect. There are many other articles of diet that may be used with greater advantage in this type of disease. There is a good deal of protein in a quart of milk, while many cereals contain only small quantities and can be used with impunity. It is recognized moreover, that the old-fashioned method of "flushing out" the kidneys may in certain forms of nephritis be pernicious therapeutics. It is only in a very limited variety of cases that flushing out is of value, i.e., in cases in which there is retention of toxic substances which must be excreted in this way and do less harm when well diluted.

There is another point on which emphasis should be laid and that is the insidious origin of many cases of acute nephritis in connection with minor infections and the importance of prophylaxis. The best example of this is the renal injury which not infrequently follows cases of ordinary tonsillitis. How rarely do we consider it necessary to insist on the examination of the urine after convalescence? And yet I believe with Volhard, that a large percentage of cases of acute nephritis are due to infected throats.

In chronic nephritis, when we speak of a damaged kidney being beyond repair, that statement is only partly the truth. We must not forget that *what remains of normal structure is still able to function*, often for years. It is this portion, the undamaged portion of the kidney, that requires treatment and protection, and I heartily concur with Dr. Rhea in his appreciation of the capability in many cases of a damaged kidney to carry on. Functional tests help and guide us in attempting to intimate the amount of protection the affected organs need.

With reference to the prognosis of nephritis, we have a great deal yet to learn. Sometimes in acute nephritis when taken early and treated with every possible care, the disease continues its downward course until the end; and in the chronic cases, the serious conditions of hypertensive nephritis seem consistent with many years of life.

One of my colleagues, who some fifteen years ago showed traces of albumin with blood cells and marked hypertension, is to-day in a prominent position as Professor of Bacteriology in the Orient, and enjoys about as good health now as he did before. In another case, a patient with marked hypertension has had persistent haematuria, frequently with claret coloured urine for two years, with all the accompanying evidences of chronic hypertensive nephritis, and yet she is enjoying a comfortable existence in spite of what would otherwise seem a very grave condition that could not last long. Surgical conditions of the kidney have been excluded by careful examinations.

**Dr. Lewis:**—The question raised by Dr. Mason's paper is how best to treat our cases of nephritis; to obtain the most satisfactory results it seems to me that certain tests which give an accurate, if empirical, knowledge of the state of the kidney function must be included in our management of the disorder. With the increased knowledge of the degree of functional damage, we will be able to carry out more efficient treatment, and often more comfortably from the patient's point of view.

The tests of function of any organ depend for their value on two points, their accuracy and their accessibility for every day use. Fortunately there are certain simple tests of kidney function which fulfil both the above requirements. We may study the concentrating and diluting power of the kidney by the simple means of measuring the amount and specific gravity of the different specimens voided during the day, in other words, the variability of the specific gravity. We also know that the healthy kidney tends to secrete a small volume of highly concentrated urine at night. The earliest signs of renal damage are nocturnal polyuria, and the loss of this concentrating and diluting power. As Dr. Mason has reiterated—"A damaged kidney cannot concentrate"; it is also true that the greater the degree of damage the greater will be the loss of concentrating power. These tests only require apparatus which is present in every doctor's office; they are therefore readily accessible to all.

A further series of tests require laboratory assistance. A defective urea excretion may be recognized by a rising value of the blood urea; this test is particularly valuable in those cases of cardio-renal disease which Dr. Gordon has mentioned. When the blood urea shows little tendency to rise in an apparently ill patient, we may assume that the symptoms are mainly due to cardiac failure, and direct our treatment towards the heart, with gratifying results; while if the blood urea is increased markedly, one thinks of severe renal damage, and give a correspondingly grave prognosis.

**Dr. Mason:**—Dr. Rabinovitch spoke of nephritis being a local manifestation of some general body disturbance. I do not think that he can be quite justified in saying this from what we know of the disease. Until more definite evidence is available I think we should consider nephritis as a kidney disease which may or may not be associated with diseased conditions in other tissues of the body.

As regards the cause of acidosis, it is quite true that the retained phosphates will not completely account for the lowered blood  $\text{CO}_2$ . Benedict's work on the formation of ammonia by the kidney seems very conclusive, and in nephritis I think we will find a lessened ability to form ammonia. This will undoubtedly bear upon the question of acidosis. In the future we will pay more attention to the physical status of salts in the blood, especially their balance between blood stream and tissue lymph. The method of determination of ionization of salts is not easy. We have got to cooperate more with physical chemists.

In reply to Dr. Finley I would like to speak of the value of functional tests in those cases where there is only a faint trace of albumin in the urine; through them we can obtain a good idea of the significance of the slight albuminuria.

## TUMOURS OF THE KIDNEY

HERBERT A. BRUCE, M.D., F.R.C.S. Eng.

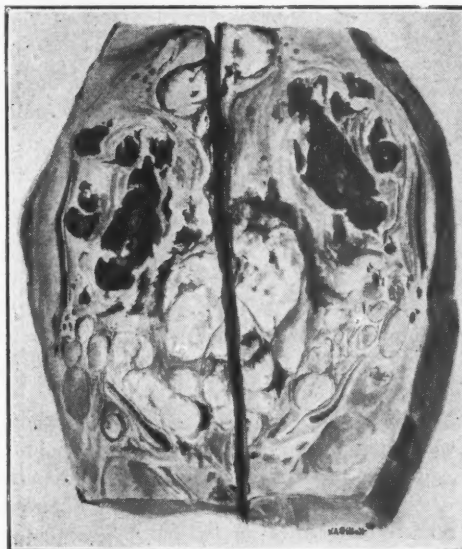
*Professor of Clinical Surgery, University of Toronto*

FROM a clinical point of view the classification of kidney tumours is not of great importance, as it is usually impossible to tell before operation whether the tumour is a hypernephroma, sarcoma, carcinoma or adenoma. The difficulty the surgeon encounters is in determining whether the condition is a tumour of the kidney or of the surrounding structures, or some other pathological lesion of the kidney, the symptoms of which simulate a tumour. Of all malignant tumours those of the kidney form the small percentage of about 0.05; and of all tumours of the kidney the hypernephroma constitutes about 65%.

Kidney tumours may arise in the parenchyma, the pelvis, or the capsule and are of connective or epithelial tissue origin. Occasionally, a mixed tumour arises and is teratomatous in nature. The hypernephroma is thought to arise from suprarenal rests in the kidney rather than from the kidney tissue. A rather convincing theory has been put forward that this tumour arises from the renal epithelium and that the various tumours described as of epithelial origin are only phases of the same growth. Sarcoma occurs more frequently than does carcinoma, and it is usually primary. Melanotic sarcoma, however, is always secondary. Carcinoma is usually secondary to a tumour in the testicle, stomach, uterus, mamma, pancreas, or of the other kidney.

Taking the hypernephroma as a type of renal tumour, we find that there is a great deal of variation in its mode and time of onset. Its average age incidence is fifty-five years, but it may occur in childhood, or, in advanced life. From the appearance of the first symptom to the recognition of the tumour, the time may be as short as a few weeks or it may extend as long as ten to twenty years. The average time is about three years. There may be only one sign, that of tumour, for many years.

*Case No. 1.—George A., act., 55:* He enjoyed his normal good health until three weeks before operation when he had a severe attack of pain resembling renal colic, and an x-ray two weeks



Entry number 1460—S/22/1361—NAME—G. A.

*Gross specimen shows a kidney increased to about one and one-half times normal size by a mass at the upper pole. Section shows a mass in the upper pole of the kidney compressing and apparently infiltrating kidney substance. The mass is yellowish in color, cellular and friable and shows large areas of haemorrhage.*

*Microscopic section shows the tumor mass to be made up of large atypical epithelial cells, somewhat columnar in shape. The nucleus is placed at the base of the cell; the protoplasm is slightly eosinophilic but poorly staining. These cells are growing in cords and solid masses but in some areas show definite tubular arrangement.*

*Diagnosis—Carcinoma.*

later showed two shadows which were thought to be stones. I was called out of town for the purpose of removing these stones. However, upon examination a large solid tumour could be readily made out connected with the left kidney. The mass which clearly had its origin in the kidney, and which was considered to be a hypernephroma, was removed and considered by Dr. Robinson to be a carcinoma. The patient made a good recovery. The interesting feature in this case was the total absence of symptoms until a very large tumour could be made out.




[ G. A.—Carcinoma. Notice Tubular Arrangement.

*Case No. 2.—I. M. L., aet. 64:* Nothing important in the past history. He had been in his usual good health when quite by accident he felt an enlargement in the left side of his abdomen, and called in Dr. R. T. Noble, with whom I saw the patient. Upon examination a round, smooth, freely-movable tumour with a tympanic note over it, was easily palpable, and a diagnosis was made of tumour of the left kidney—probably a hypernephroma. Dr. J. C. McClelland, who catheterized the ureters and made a phthalein functional test of each kidney, reported an excretion for the right kidney of 4% in thirty minutes, and for the left kidney 14% in thirty minutes, making the observation that the right catheter was blocked, giving rise to a mechanical error. Thorium introduced into the left renal pelvis showed it to be slightly enlarged in front of the last rib with the lower major calyx enlarged, but the minor calyces sharply defined. The left ureter was displaced by the mass towards the mid-line. Dr. McClelland reported, "That the kidney was above the mass felt in the flank and distinct from it. Both kidneys were functioning well, the defect in this test of the right side being apparently a mechanical one." He suggested a barium enema and a blood examination for possible splenic disease. In spite of this report one felt confident that the tumour was connected with the kidney and operation was undertaken on August 17th, 1921, when a left nephrectomy was performed. The pathological report is as follows: "Kidney slightly enlarged with whitish nodule near lower pole, the size of a hazel nut; capping the kidney is a mass the size of a large grape-

fruit, which on section contains yellowish coloured material with centre degenerated into a brownish



Entry number 921—S/22/1303—NAME—I. M. L.

*Gross specimen* shows a kidney with a mass the size of a large orange, attached to the upper pole through an area of about two inches diameter. The mass is apparently completely encapsulated apart from its attachment to the kidney, is of spongy consistency, and blood vessels course over the surface. One small nodule,  $\frac{1}{2}$  inch in diameter, yellowish white in color, somewhat rough on the surface, protrudes through the capsule. On section the mass is yellowish and reddish brown in color and extremely friable. Towards the lower pole of the kidney there is a small nodule protruding on the surface, yellow in color, similar in character to the nodule seen in the growth. 

*Microscopic section* shows a papillomatous arrangement of atypical epithelial cells, cubical in shape with a neutrophilic protoplasm. The cells for the most part are well differentiated and lie in a single layer over a thin connective tissue core.

*Diagnosis*—Papillary Carcinoma.



coloured fluid. Slide shows irregular cords of cells, pale staining and contain fat." *Diagnosis*—Hypernephroma of kidney with secondary nodule in kidney.



I. M. L.—Papillary Carcinoma.  
Showing Papillary Arrangement.



I. M. L.—Papillary Carcinoma.  
Showing Papillary Arrangement.

A small sinus persisted, and in January last was dissected out, and sent to the pathologist who reported that it showed the large irregular masses, typical of a secondary growth from a hyperne-

phroma. Since then he has had deep x-ray therapy, but it is too soon to say whether it will be beneficial or not.

*Case No. 3.*—*Mr. W. S., aet 50:* The patient had been complaining for a year of increasing general debility, a feeling of distention in the abdomen, flatulence and indigestion. He had lost about ten pounds in weight during the last year. It seemed a remarkable fact that a huge tumour, filling almost the entire abdomen, could



Entry number 926—S/21/1905—NAME—W. S.

*Gross specimen* is a mass about the size of a rugby football showing no evidence of kidney tissue. Surface is smooth and many vessels lie under an incomplete delicate capsule. The mass is yellowish in color and shows areas of haemorrhage varying in size. (Fresh section was soft, pulpy and on section showed semi-gelatinous looking material, marked by fibrous septa) Small areas of haemorrhage are to be seen throughout. The tissue is distinctly pulpy and friable.

*Microscopic section* shows large cells with very poorly staining protoplasm and small elongated nuclei. Outside the cells are fibrils. The cell resembles a myxoblast in size and shape, but some areas show differentiation into typical fibroblasts. There are some mitotic figures present. There are many poorly formed blood channels.

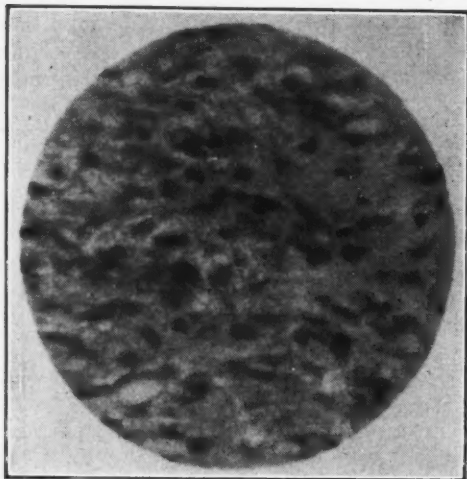
*Diagnosis*—Fibro Sarcoma.

have been present without the patient himself having observed it, and without being recognised by his family attendant, who had prescribed for him a number of times during the previous year. About two weeks prior to operation, examination revealed a very hard tumour the size of two adult heads, completely filling the left side and

bulging over into the right half of the abdomen. A middle line incision was made from four inches above the umbilicus to one inch above the pubis. When the abdomen was opened the relief of tension in the soft rapidly-growing tumour caused it to rupture. Considerable haemorrhage fol-

After very considerable difficulty the tumour and kidney were removed and the pedicle tied. It was considered unwise to resect the caecum and the softened area, about to perforate, was simply stitched over. He did very well for a week, when he was suddenly seized with severe abdominal pain followed by rigidity. Death occurred in twelve hours. The autopsy revealed a perforation at the seat of the involved caecum. Microscopic section showed it to be a sarcoma.

Case No. 4.—Mr. W. G. C., *aet.*, 55: For a period of two years beginning ten years ago he had



Entry number—926—S21/1905. NAME—W. S.  
Fibro Sarcoma. Oil Power.



Entry number—926—S21/1905, NAME—W. S.  
Fibro Sarcoma. High Power.

owed, so that although one found the growth had invaded the caecum and would be exceedingly difficult to remove, there was no alternative as its quick removal was the only way to control the hemorrhage effectually. The small intestines were spread out over the tumour, and had to be lifted off during the isolation of the tumour.



Entry number 1381.—S/22/1060—NAME—W. G. C

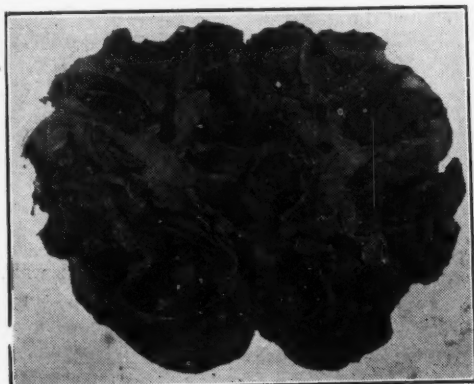
Gross specimen, huge kidney 15" long, 6" wide and about 5" deep, covered with a fibro-lipomatous tissue. The mass is fluctuant. Section shows remains of a dilated kidney wall with dilated calyces filled with a colloid material, which in some areas is distinctly purulent. One stone is embedded in the tissue in the region of the pelvis.

Microscopic section shows the wall to be made up of fibrous tissue infiltrated with lymphocytes and endothelial cells. Large number of crystals can be seen surrounded by large foreign body giant cells.

Diagnosis—Pyonephrosis.

recurring attacks of chills and fever about every ten days. He was confined to bed on these occasions for one or two days. He had had occasional pain in the right side for some years. About three years ago he had a severe attack which was diagnosed "gall-stones". The patient was examined one year ago for life insurance and passed, as no mass could be felt in the abdomen

at that time. Blood pressure is now 190. A cystoscopic examination shows urine coming from left ureter, none from the right. On examination one could see and feel an enormous fluctuating tumour filling rather more than the right half of the abdomen. The colon was displaced inwards. The tumour was so large as to interfere with the movements of the diaphragm. A diagnosis of a pyonephrosis was made although nothing as large had ever been seen before. It was removed on May 8th, 1922, when it was found to consist of a sac, attached to which were remnants of kidney tissue filled with eight pints of purulent fluid. The cyst wall was in contact with the diaphragm and also in contact with the second and third portions of the duodenum. It was somewhat difficult of removal on account of firm adhesions to surrounding structures. At the end of the operation his blood pressure had fallen to 110, but he had very little shock and did



W. G. C.—Pyonephrosis.  
Kidney Opened.

exceedingly well until the sixth day when he developed pneumonia from which he seemed to be recovering nicely when seven days later, i.e., the thirteenth day after operation he suddenly passed away from cardiac failure.

*Case No. 5.—Mr. E. R., aet. 25:* This patient had no symptoms whatever until three weeks previous to operation when he was taken with pain in the left side, and called his physician, who, on examination, discovered a tumour. It was about the size of a baby's head, occupying the epigastric and left hypochondriac regions, was elastic, smooth, rounded, and moved with respiration. A diagnosis of hydronephrosis was made, and confirmed at operation when a nephrectomy was done, only a slight amount of kid-

ney parenchyma being left. He made a good recovery.

In considering the diagnosis of renal tumours, the following symptoms are of chief importance: (1) *Haematuria*; (2) *Tumour*; (3) *Pain*.

#### (1) HAEMATURIA

This symptom characterizing a renal tumour is spontaneous; it is intermittent over long or short periods. As it usually comes from the tumour, it may be regarded as an over-flow and unaccompanied by pain or fever, or displaying these latter symptoms only if clotting occurs subsequently. A milder form of haematuria, which is of a low degree and more constant may occur as the result of the tumour pressing on the surrounding renal tissue.

The blood found in the urine is traced up to the kidney by means of the cystoscope and ureteral catheter. While this is done, the ureteral orifice is examined to find any dilatation of the superficial blood vessels which may occur in tumour. It is extremely important to resort to the cystoscope while the haematuria is in progress, in order to determine from which kidney it comes. If this is not done, a long time may be lost in making a diagnosis. Blood coming from the kidney may be due to many conditions besides tumour. It may be the only manifestation of essential haematuria; it is frequently found in nephrolithiasis; it may mark the early stages of tuberculosis of the kidney; a renal infarction or infection may display this symptom. At times a bleeding hydronephrosis simulates very closely a renal neoplasm. The activity of parasites such as the *Filaria* or *Bilharzia* may produce the symptom; and lastly, it may occasionally be found in movable kidney when kinking causes a temporary obstruction.

*In Essential Haematuria.* Almost invariably the bleeding is the only symptom. The diagnosis of renal tumour should never be made on the evidence of bleeding alone. When symptomless haematuria occurs in the presence of normal renal function and the side affected is determined, nephrotomy may be a necessary procedure to arrive at a diagnosis.

*In Nephrolithiasis.* The urine shows pus as well as blood, and the subjective symptoms are characteristic. The x-ray may confirm the diagnosis.

*In Tuberculosis.* Bleeding is a very infrequent symptom. Pus and the tubercle bacillus may be



isolated in the urine. The constitutional symptoms and findings of tuberculosis are also present.

*In Movable Kidney.* Infrequently the sudden intrarenal tension accompanying the kinking with obstruction may give rise to bleeding. The acute symptoms of Dietl's crisis should be recognised.

*In Renal Infarction.* There may be symptoms of endocarditis and the bleeding is a symptom of an acute illness which commences with a rigor followed by fever.

*In Pyelitis, Pyelonephritis and Pyonephrosis.* There should be no difficulty in recognising these conditions of ascending or haematogenous infections.

*In Haematonephrosis.* When bleeding occurs in a hydronephrosis the subjective symptoms closely resemble a renal tumour. The finding of a large amount of residual bloody urine in the renal pelvis and a pyelogram make the diagnosis clear.

## (2) TUMOUR

By far the most important point in the diagnosis of renal tumour is the determination of the tumour itself by palpation. This is rendered difficult by a rotund abdomen and by a high position of the tumour. The suspicion of tumour is strengthened when coincident circulatory disturbances are manifested by an irreducible varicocele, by haemorrhoids, by dilatation of the superficial blood-vessels of the bladder, or scrotum, etc. Such pressure symptoms as a partial intestinal obstruction or a jaundice may tend to obscure the diagnosis so that one must bear in mind the anatomical relations of each kidney in order to determine what pressure symptoms might occur from a high tumour on one or the other side. These symptoms may be absent or present to such a mild degree as to be disregarded by the patient and he may not present himself until the tumour has attained a very great size.

The tumour is firm and irregularly round. It tends to become more and more fixed, moving little, if any, with respiration. The tumour is best felt projecting from beneath the last rib and filling out the space between it and the iliac fossa, and, with one hand behind and the other in front, it may be pushed back and forth. Inflation of the colon with air may reveal this structure pushed inward above the tumour, and in this position the condition may be mistaken for a tumour of the spleen. Sometimes a renal

tumour assumes a median position, the colon being external, and may be high enough in the abdomen to simulate a pancreatic cyst. When the tumour is on the right side it may be mistaken for a distended gall-bladder or a tumour of the liver. One must bear in mind the possibility of a retroperitoneal tumour or of enlarged lymphatic glands found in Hodgkin's disease. A tumour in a displaced kidney, or one invading the iliac fossa may bear a resemblance to an ovarian cyst. Finally, a kidney tumour must be distinguished from a cystic kidney or hydronephrosis. In renal tumour the examination of the urinary tract may reveal the ureter pushed towards the median line, or abnormally out in the flank or depressed along with the pelvis. A pyelogram may show a distortion of the pelvis; one or more of the calyces may be so deformed as to give a spider-like appearance; or the pelvis may be irregularly compressed or dilated without any evidence of stone. An x-ray of the kidney itself may show a slight shadow which may be taken for a calculus as in Case 1. The x-ray examination of the oxygen-inflated peritoneal cavity may prove helpful in making a diagnosis.

*In Tumour of the Spleen.* The tumour dullness is higher in the left flank than a kidney tumour and when it projects beyond the costal margin its dentated margin is diagnostic. It moves with each respiration. As it descends into the abdomen it is in contact with the abdominal wall, hence there will be dullness over it, and a tympanitic note in the left flank. Whereas in renal tumour there will be dullness in the flank and a tympanitic note in front. There are blood changes and none of the urinary symptoms of renal tumour.

*Distended Gall-bladder.* This should present no difficulty as this is an acute condition with symptoms referable to the digestive tract and no urinary symptoms or findings. The tumour does not invade the flank and is close beneath the abdominal wall and tender on palpation.

*Pancreatic cyst.* There is usually a history of former injury. The tumour is fluctuating, and the regular spherical form which it assumes as it insinuates itself between the abdominal organs is helpful in distinguishing it from a solid tumour. A pancreatic cyst most frequently comes forward to the abdominal wall between the stomach and transverse colon, where it will be recognised as a dull tumour between the tympanitic note of the distended stomach above and

the colon below, following inflation of the two latter. There is no haematuria and no cystoscopic or pyelographic evidence of renal tumour. The symptoms of pancreatic insufficiency may be present.

*Ovarian cyst.* This is determined by an accurate pelvic examination along with an absence of urinary findings.

*Hydronephrosis.* The tumour usually varies in size from time to time according to the temporary relief of the obstruction. It is usually fluctuating. When the ureteral catheter is passed, it encounters some obstruction in the urinary tract. If this is slight, and the catheter passes, there is a copious flow of urine, where previously there was none. When the ureteral catheter has passed the obstruction, a pyelogram shows the distended pelvis. It may, however, be impossible to pass the obstruction as occurred in the case which I am reporting to-day.

*Cystic Kidney.* Polycystic disease most frequently affects both kidneys. There is renal insufficiency, high blood pressure, and low specific gravity of the urine. The phthalein and the blood urea tests, which are respectively low and high, are helpful in ruling out tumour. The simple cyst which rarely occurs cannot be definitely diagnosed from a tumour. It is usually found in the lower pole, seldom becomes larger than a grape fruit and is, as a rule, symptomless.

### (3) PAIN

The pain is of three types. (a) *Local pain.* due to intrarenal tension. It may be felt in the upper abdomen or in the back. It is more or less constant and usually dull. (b) *Referred pain* from pressure on surrounding nerve trunks. It is neuralgic in character and may radiate down towards the groin. (c) *Colicky*

*pain* from sudden haemorrhage or from blood clots or pieces of tumour tissue in the urinary tract, may assume all proportions up to the simulation of a true renal colic due to stones.

The character of the pain in renal neoplasm is described as having so many variations, and the fact that it is sometimes absent, has resulted in text-book description of this pain which are not of much diagnostic value. To make this symptom of any value it must be traced throughout the whole duration of the complaint and its various manifestations linked up with the progress of the disease as manifested by other symptoms and signs. If this could be done in those cases exhibiting pain it would probably be found that the many described variations in the character of the pain were really only phases of the symptom as observed at different stages of the growth of the tumour.

A sickening pain of short duration in the back or loin is inflammatory in origin and is not the kind of pain which characterizes a tumour. The pain of a tumour is dull and of long duration. It is a pain which the patient does not guard. He tries to get away from it, and in this respect it resembles pain of a colicky nature rather than that of an inflammatory condition. The dull pain of long duration, which unlike that of stone, is independent of motion, with exacerbations of acute colicky pain or sharp pain tending to radiate down along the ureter, and usually accompanied by haematuria, is strongly in favour of renal neoplasm.

Again, when a persistent pain in the region of the kidney gradually assumes a neuralgic character radiating into the abdomen or down towards the groin, it is frequently significant of an increasing growth in the kidney pressing on surrounding nerve trunks.

**Traumatic Hydronephrosis.**—A. Sträuli records in detail the case of a man, aged twenty-five, whose hydronephrosis was traced to a fall on his back. The author's discussion of the accident insurance aspect of such cases shows how difficult it is to trace the genesis of a hydronephrosis to an accident, and though about fifty cases of traumatic hydronephrosis have been recorded, all do not bear close scrutiny. In distinguishing between traumatic and non-traumatic hydronephrosis the three following points should be con-

sidered: (1) absence or presence of renal symptoms before the accident; (2) absence or presence of other causes of hydronephrosis, such as congenital anomalies of the urinary system, disease of the uterine appendages, chronic perityphilitis and peritonitis, tumours of the abdomen and bladder, and gonorrhoeal stricture of the urethra; (3) proof that the accident directly affected the kidney or led to changes which could be regarded as responsible for obstruction to the flow of urine.—*Brit. Med. Jour.*, December 16th, 1922.

## TUBERCULOSIS OF THE INTESTINE—THE ULCERATIVE FORM, AS A PHASE OF PULMONARY TUBERCULOSIS\*

D. A. STEWART

*Ninette, Man.*

IN the past five years a series of masterly papers and addresses by Archibald, Pirie, Brown and Sampson, and Carman, with a considerable literature besides, has brought this phase of tuberculosis, clearly, almost dramatically, before both physicians and surgeons. I venture to bring the subject again before you to discuss the question of how close the association is between the disease manifesting itself in the lung and in the intestine.

Looking backward over what experience we each may have had in the treatment of tuberculous patients; considering the frequency, the early appearance, and the persistence of intestinal symptoms; considering the old dicta that the road to recovery lies through the stomach; that the best friend of the consumptive is a good digestion; that poor eaters do badly; that digestion is the key-stone of the prognostic arch; that a flux of the bowels tends to a fatal outcome, should we not be on the outlook for early and definite complications in the intestinal tract? Among eighty-nine unselected cases of pulmonary tuberculosis, many of them early, Lawrason Brown found four with definite enteritis, roughly four per cent., and two suspected, roughly two per cent. In the Manitoba Sanatorium we deal with patients of farther advanced types than Brown's. Of five hundred and sixty who were definitely tuberculous in the period under consideration—a little over two years—only six per cent. were classed, as to their pulmonary disease, as incipient; sixteen per cent. as moderately advanced, and seventy-eight per cent. as far advanced. Of the far advanced, one third, that is twenty-three per cent. of all admitted, were sub-classed as "apparently hopeless".

All five hundred and sixty patients were questioned as to intestinal symptoms, and fully examined; a barium investigation was made on suspicion only. Positive symptoms and also positive barium signs were required for a definite

diagnosis. In this body of patients, then, out of five hundred and sixty, two hundred and nine, or about thirty-seven per cent. were definitely suspected of intestinal disease. Of these, sixty-three, or *thirty per cent.* were considered fairly negative, forty-three, or *twenty per cent.* doubtful or not proven, and one hundred and three, or *fifty per cent.* of those suspected, were regarded as positive. Of the five hundred and fifty, then, *thirty-seven per cent.* were suspected of intestinal tuberculosis, and *eighteen per cent.* diagnosed as having definite intestinal tuberculosis.

Our impression is that in this series we have been altogether too conservative; that we have demanded too much evidence, especially too definite barium signs, before making a diagnosis; that the incidence of intestinal disease is really higher in cases of this type than our percentages show; that most of our suspected cases should be considered positive, and that full investigation of the intestinal tract in patients having pulmonary tuberculosis should be a routine. A series of post mortem examinations by several observers have shown definite tuberculous intestinal ulceration in from seventy-five to ninety per cent. of the bodies of those who have died of pulmonary tuberculosis. Such a high percentage as this at the time of death suggests that enteritis may have given the "knock-out blow."

In the ordinary run of post mortem material, healed intestinal lesions are found, even in the bodies of children. Heller and Wagner found twenty-eight foci, evidently primary, and healed, in six hundred autopsies. Opie states that in twenty-five per cent. of all autopsies on British soldiers nodes showing healed ulcers of the bowel were found. Surgeons also find such lesions, healed and unhealed, where there had been no complaint of symptoms. Many such foci must surely be primary. We have, then, clinical and pathological evidence of a frequent and close, late and even early association of intestinal with pulmonary tuberculosis. It may be that the pulmonary lesions have too much dominated

\*Read at the Meeting of the Canadian Medical Association, Winnipeg, June, 1922.



our picture. Intestinal ulceration has been in the past regarded as a complication only, scarcely looked for or expected until it thrust itself upon our attention. Perhaps we should raise the complication from a subordinate place to an equal or almost equal partnership in crime. Why must it be always pulmonary tuberculosis complicated by intestinal tuberculosis? May it not sometimes be rather intestinal tuberculosis complicated by disease in the lungs, "intestinal and pulmonary" rather than "pulmonary and intestinal", the intestinal disease the earlier of the two, the senior partner? We know it is very often in the late stages the dominant partner. Perhaps the disease entered through the intestine and passed to the lungs and did not enter at the lungs and pass to the intestine.

*Diagnosis.*—What of the diagnosis? An ounce of early diagnosis is worth many pounds of attempted cure. A diagnosis well made is treatment well begun. We all know the old text book symptoms of disease in the intestinal tract, anorexia, even nausea, tenderness and pain, diarrhoea and emaciation. To demand these for the diagnosis of intestinal tuberculosis is like demanding for the diagnosis of pulmonary tuberculosis bubbling and cavernous rales, night sweats and a hectic flush. They are late and prognostic, not early and diagnostic signs. The diagnosis should be made, must be made, long before these appear. Lawrason Brown mentions as early symptoms extreme nervousness, constipation, slight dyspepsia, a feeling of discomfort after meals, gas, failure to gain weight under suitable conditions; a general "not doing well" for which no other special reason can be found. He considers neither pain nor diarrhoea to be really early symptoms. Archibald thinks that any derangement of digestion or of appetite, especially in one who has pulmonary disease, and any pain should always be looked on as possibly due to tuberculosis of the bowels. I am inclined to consider impaired appetite in one who has pulmonary tuberculosis as the most suggestive early symptom. Perhaps one should include any abnormality of appetite. In one of our patients the usual symptoms of acute intestinal disease found at operation to be very wide-spread, were preceded by months of ravenous appetite. The nervous organization seems much more profoundly affected by intestinal lesions than by pulmonary, and mental depression is common, although seldom met with in pulmonary disease. Archibald considers typical pains as conclusive

in the diagnosis. "When the patient complains of a pain felt in the mid or lower abdomen, coming on at regular intervals during the day, but chiefly from the late forenoon or afternoon on, transient often, crampy or stabbing, suggesting gas pains, aggravated by food and relieved by fasting, felt only during part of the day, but persisting from day to day, then one must be very suspicious of tuberculosis. When, in addition, he complains of loss of appetite, of real distaste for food; when he has nausea at times; when he gives up one article of food after another; when he develops a slight fever which is not attributable to his lung condition, and if this persists over three or four weeks, then one may be almost sure of the diagnosis." The later symptoms, which are unfortunately too well known to need mention, may vary according to the localization of the ulcers and other elements and phases.

Any part of the bowel, from the stomach to the anus, may be affected, the order of frequency being apparently the ileocecal region, the ascending colon, jejunum, descending colon, sigmoid and rectum. The ileocecal valve and the caecum would seem to be the storm centre. There, Carman says, the ulcers are confluent. Constipation seems characteristic of lesions of the small and diarrhoea of those of the large bowel.

*X-ray in Diagnosis.*—But if the diagnosis is to be made early, before any but vague and slight symptoms have appeared, indeed before definite complaint has been made, the opaque meal and enema must be given at least an equal share with clinical investigation. In our series, the meal was given as a routine, the enema as a secondary procedure, chiefly when in doubt. I am not sure that this order would be approved by all workers. The diseased bowel has patches of ulcerated inner surface; its walls are infiltrated and hypertrophied; and there are constrictions and adhesions which narrow its lumen, and make kinks in its course. Naturally, marked abnormalities in the progress of the meal, and in the filling of the bowel by meal and enema, result. Spasm may cause delay, as is, perhaps, a frequent condition when the disease is in the upper bowel: local or general hypermotility may supervene, especially when the disease is in the lower bowel. Every type of pathology in the bowel makes for defective filling. The meal or enema does not show the full expansion, the well-rounded haustrations or the smooth outlines of the normal bowel. But there's the rub. What is the normal bowel? What is a normal nose, or chin, or face, or figure,

and what variations in filling can still be considered a normal bowel outline? How few and fine barium variations should be classed as diagnostic, or how slight symptoms, or how small a total of signs and symptoms? Those who, like Carman, see unselected cases, allow great diagnostic weight, in intestinal conditions, to the presence of pulmonary tuberculosis. We, who see selected series, all having pulmonary lesions, perhaps do not allow enough weight in diagnosis for tuberculosis already present in the lungs. Barium is of the greatest help in outlining the large bowel, of very little value in diagnosis of small bowel lesions. If tuberculous ulceration of the bowel has recognizable early stages, if by clinical observation and study, by opaque meals and enemata, and perhaps by other methods yet to be devised we can learn to diagnose at an early stage, and institute treatment at any early stage, we should expect to better the prognosis not only of this one phase of the disease but of the whole general disease—tuberculosis—as well. Late treatment can only be palliative; early treatment can aim to cure.

*Treatment* of tuberculous ulceration of the bowel, which has in the past been chiefly for the relief of symptoms, has included general good conditions, diet, drugs, and enemata. To these may now be added light therapy, including perhaps, the x-rays, and surgery. The general good conditions, rest, regulation of energy expenditure, fresh air and the various other phases of the routine of a tuberculous patient, become doubly insistent, when the least or earliest sign or even suspicion of intestinal disease arises. Dietetic considerations are rather negative than positive, the choosing of food not irritating or gas producing.

Drugs of almost every kind have been used, antiseptics, sedatives, astringents, opiates, and even lubricants, for the relief of symptoms rather than for the cure of the disease.

*Light Therapy.*—The oldest of therapeutic agents has become the most modern also. There is something not new under the sun, light. Artificial light can be applied easier than the sun's rays, and with less risk, more regularly and to patients more ill. The Alpine Lamp seems to give results in intestinal tuberculosis. There is no doubt as to the enthusiastic belief of the patients in its efficacy—and even that is of value.

Our routine, after gradual habituation to the lamp, is forty-eight minutes exposure, twenty-four back and twenty-four front, the lamp at

twenty-four inches, every other day, in alternative periods of three weeks. Brown pushes the lamp beyond this limit and exposes to x-rays as well. Of the forty-three doubtful cases in our series, fourteen were unsuitable for lamp treatment on account of progressive lung lesions, and eight for other reasons. Of the twenty-one who had lamp treatment, in sixteen the intestinal symptoms were definitely improved and in five not improved.

Of the one hundred and three positive cases, thirty-nine were hopelessly ill—too ill to be subjected to lamp treatment—and eight have been on this treatment for but a short time. Of the fifty-six positive cases and twenty-one doubtful cases, seventy-seven in all, who had lamp treatment long enough to give some idea of results, an analysis may be made. Of seventeen with gross active lung disease and acute active intestinal disease, one improved temporarily, two more permanently, (one operated upon also) fourteen did not improve. Of the ten with gross active pulmonary tuberculosis and less active intestinal disease two improved temporarily, eight did not improve. Of three who had pulmonary disease less gross and active, but whose intestinal disease was active, all improved, two after operation. Of the remaining forty-seven whose pulmonary disease was not so gross or active and intestinal disease not more than moderately active, all but five made what is apparently permanent improvement, or recovery, and one was improved temporarily; only four made no improvement.

Of the whole seventy-seven, treated by lamp for a considerable time, many of them with gross pulmonary and intestinal lesions, two-thirds have shown improvement. On the other hand, results of operation are, to say the least, not altogether encouraging, even considering the newness of this method, and that it will likely improve, and that lamp results are so recent as to be scarcely comparable. With these considerations in view Brown reports sixteen cases operated upon of whom three are living and thirteen dead; thirty treated by lamp, of whom, so far, twenty-five are living and five dead; and twenty-nine who had no definite treatment beyond general routine of whom ten are living and nineteen dead. Of seven patients we have sent for operation one favourable and one very unfavourable and indeed unsuitable died within a few days of operation. Two had unilateral exclusion for extensive disease, and are apparently recovering or recovered. Two had disease so wide-spread above and

below the valve that operation was decided against. A third with similar findings is making a good recovery after removal of a troublesome looking appendix.

*Surgery.*—Surgical treatment of some forms of intestinal tuberculosis is not new. Hypertrophic conditions, stricture of the small bowel due to ulceration and tuberculous disease in the appendix have long been submitted to operation, but resection or exclusion of an ulcer-studded segment of a tuberculous bowel in order, by putting it at rest, to promote healing, is a comparatively new application of surgery. The choice of operation is influenced less, perhaps, by the state of the bowel than by the condition of the patient. Archibald considers the more complete operations preferable, the choice being, excision, then exclusion, bilateral or unilateral. When these are not possible, opening the large bowel and forming an artificial anus, or even the removal of a troublesome appendix, may be palliative, and sometimes of more permanent benefit. Wide-spread active or progressive lung disease is a contra-indication to operation. Archibald considers that the outcome varies directly with the condition of the lung lesion. Wide involvement of the small bowel, which unfortunately cannot be determined at all definitely before operation, is also a contra-indication.

Among the various kinds of lesions Archibald considers hypertrophy and stricture to be evidence of general resistance of the body to tuberculosis, and ulceration to be associated with lack of resistance. Operation would, of course, be much more likely to be successful in the former than in the latter type of case. Long duration of symptoms, especially of discomfort and distress with failure to respond to three months or six months lamp treatment should raise the question of operation. In such a case, Brown says, the lamp is of little value, though the lamp and the x-ray may do better. In acutely progressive intestinal disease, even if wide-spread, the chance of operation should be taken if the lung condition is not too active. No other treatment will overtake the disease. It is surgery or nothing.

Over against the shock of operation, there are the compensating advantages of eliminating an active focus of disease; of clearing up the diarrhoea, and of the relief of pain. Operation may be indicated even for the relief of symptoms. The

surgeon asks that the intestinal disease to be suitable for operation shall be early, localized and limited; that the small bowel shall not be too widely involved, and especially that the lung lesions shall be limited in extent and activity, and the general condition fairly good.

But we can rarely give the surgeon all he asks. We are privileged to see the earlier stages of disease in very few of our patients. Intestinal disease when we see it first is in most cases a part of a distressful far-advanced long-neglected general condition for which ignorance both in and out of our profession are responsible. Surgery has little to offer if it can help only an ideal early case; if it can pluck no other brands from the burning.

*Treatment Eclectic.*—The choice of treatment must be eclectic. The big, obtrusive, difficult question is as to the place of surgery; the great decision, to operate or not to operate. This question a physician cannot presume to finally decide. This much can be said, that operation, however successful, is but an incident in a long patient treatment. To it all other useful forms of treatment must be added. Of these so far as we can see at present the quartz lamp—perhaps with the x-rays added—is altogether the most promising.

Though still largely empirical treatment its results apparently are such that it should be pushed perseveringly in all definite or even suspected cases of intestinal tuberculosis, and should not be denied, where it can be given, to even the far advanced and apparently hopeless.

*Summary.*—We may conclude, then, that intestinal ulceration, tuberculous in origin, is found in a fairly wide percentage of cases of pulmonary tuberculosis. It is likely implanted early, perhaps earlier than the lung lesion. It is almost universally present in the late stages of pulmonary disease and hastens, or perhaps causes, death.

It is treatable and even curable in its early stages. Early diagnosis, especially of disease in the small bowel, is not yet satisfactory, but much can be done by careful study of symptoms and the opaque meal and enema. Surgical treatment is suitable in some cases, but is of limited applicability. The most promising treatment at present would seem to be the ultra violet ray given by the quartz lamp, with perhaps the x-rays as well.



## CANCER OF THE STOMACH\*

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DOUBTLESS more than one person present has said "Why in the world didn't he choose something of a more general interest!" My reason for selecting cancer of the stomach as a subject for discussion is that unfortunately most cases are not suspected, much less recognised until they are hopeless. If we doctors become fully alive to a sense of our responsibility to our patient many lives may be saved, and many more prolonged indefinitely by an early suspicion and a careful diagnosis.

Bear this in mind that the nerve supply of the stomach comes from the two pneumogastrics and from the coeliac plexus of the sympathetic. These nerves *per se* are not sensory nerves but the sympathetic fibres intercommunicate with the dorsal nerves and through these one may derive referred sensation or even pain. Pain is not and cannot be an early symptom of cancer; hence don't wait for pain. Pain is a late symptom and suggests involvement of the abdominal parieties, excepting\* pain referred through fibres of the sympathetic, as mentioned above.

Remember this too, that the digestion, so far as the stomach is concerned, depends partly upon the chemical action of the secretions and partly upon the mechanical mixing of the contents. Given a meal the stomach at once pours out its secretion, consisting principally of pepsin and HCl. This often is encouraged by a well-balanced meal, beginning with an appetizer, or a hors d'oeuvre, and secretion begins even before the food enters the stomach. In a few minutes after the entrance of food peristalsis begins, so that essentially it is but a mixing basin. Little absorption takes place in the stomach except of water and, in pre-prohibition days, of alcohol. Anything that causes interference with the secretion or with the mixer will sooner or later cause symptoms.

To us as doctors falls the duty of interpreting these symptoms, making at the same time a close study of any physical findings that may be

present. A great essential in the investigation of a case is a carefully taken history. Sometimes when time permits I like to get Dr. Shier to take a patient's history, then get Dr. Graham, and then take one myself; then get together and thrash the thing out among ourselves with the patient present to correct any improper interpretation of his statements.

When a patient comes complaining of distress or discomfort in the epigastric region which, when the history is carefully analyzed, one finds comes on at any and all times with eructations of gas and often food, which bears no relationship to the quality or even the quantity of food taken, or when the patient complains that he has lost 'pep'—he may have begun to lose weight because of his failing appetite—investigate that patient until you can absolutely eliminate cancer of the stomach, and you will save yourself many heart-burnings.

Don't, I beseech you, hide behind such diagnoses as indigestion, torpid liver, and what not. Such terms are merely excuses for ignorance or laziness. Don't fiddle with *treatment* until you are sure of your diagnosis.

Palpate the abdomen carefully with the knees flexed for a possible tumour. Note the various skin reflexes. Examine the stomach contents for the presence or absence of HCl. Commonly it is absent in cancer, but it may be present even in advanced cases. Note the presence of food particles and find out when such were eaten. To demonstrate pyloric obstruction the patient may be given a few raisins and the stomach washed out ten or twelve hours later, to find if they have remained in the stomach.

When you have exhausted all the means at your disposal and are still not sure, send your patient to a competent gastro-intestinal x-ray expert, for this is a most satisfactory method of arriving at a conclusion, providing your x-ray man is an expert.

If the findings all lead to cancer or even to a suspicion of cancer, then the patient must be taken into your confidence and told frankly what you

\*Read at Ontario County Medical Association, Oct. 1922.

suspect. Don't beat about the bush and talk learnedly of "growths", talk about "cancer". It is not a nice subject of conversation but I've never yet seen a patient who was not grateful for the confidence placed in him. Suppose he does get sore and go off to someone else or to the Christian Science healer, or to the osteopath, your conscience is clear and he is the worse off for not following your advice.

It is, however, not necessary to paint too gloomy a picture for the condition may not be hopeless if you have made your diagnosis early. I am glad to say that we are improving with the years as the following personal experience will show: In the period of five years from 1907 to 1911 (inclusive) I operated on eight cases of cancer of the stomach. In only four was it possible even to do a gastro-enterostomy, all being inoperable so far as radical measures were concerned.

From 1912 to 1916 (inclusive)—29 cases:

In 13, or 45%, it was possible to do a palliative gastro-enterostomy.

In an additional 5, or 17%, it was possible to do a resection of the stomach.

Of these

1 died of pneumonia 3 years later,

2 are still living,

2 cannot be traced; hence probably dead.

From 1917 to 1921 (inclusive)—39 cases:

In 12 a palliative gastro-enterostomy could be done.

In 13, or 33%, a radical operation was done.

Of these

1 died of delayed shock 2 days after operation.

1 died of acute dilatation 10 days after operation.

1 died of pneumonia 11 days after operation.

1 died of secondaries in the liver 2 years after operation.

1 is now dying of secondaries in the retro-peritoneal glands.

8 are living and well.

Of these seventy-five cases let me say that the later the diagnosis the more hazardous the risk of even opening the abdomen. In all these cancer cases there is an "unknown quantity" to be dealt with. In many of the cases if exploration has to be done to determine the operability, it is well to do it under local anaesthetic with the assistance of analgesic gas.

I think a study of that list will show that as the years progressed there was a decided improvement in the diagnosis as demonstrated by the number in which resection was possible. There will always be cases, however, that never consult a doctor until the case is hopeless.

Having made the condition as clear to the patient's mind as it is possible, and the patient

having decided that he will undertake the risks coincident therewith, a surgeon must be chosen who is known to be competent to deal with the case as the pathology found demands. It is not fair to the patient or to another surgeon to open a man, verify the diagnosis, and then turn him over to someone else to complete the job that might have been done at one sitting.

Having an "uncertain quantity" in all these cases to deal with, the patient should be in bed in hospital for several days prior to operation. He should *not* be purged, but should be fed with as much nourishing food as he may be able to assimilate. He should get a 5% sodium bicarbonate solution with 10% glucose by Murphy drip for at least two days prior to operation. If there has been much previous vomiting with its associated prostration, he should have added to the solution the day previous to operation a drachm or two of concentrated tincture digitalis, and if he is to have gas oxygen anaesthesia he should have added to the last lot of solution before discontinuing for the night, 90 grs. sodium bromide, with orders that if not sleeping by ten o'clock he should have a sedative administered so that he may have the benefit of that greatest of restoratives—sleep.

The stomach should have a lavage that last night and also on the morning of operation; this latter may be done on the table just prior to operation, in order that the full amount of rest may be obtained.

As soon as the anaesthetic is well under way an interstitial of normal saline should be instituted. If given into the axillae it is readily absorbed and may be continued slowly throughout the operation.

When the abdomen is opened, preferably to the left of the midline, the liver as well as retro-peritoneal glands should be looked over for secondaries, and if none can be detected, then one may proceed to remove one-third, one-half, or three-fourths, or even practically the whole stomach, as the case may require, leaving if need be only a collar about the oesophagus to which one may attach a loop of jejunum.

If such precautions are carried out with meticulous care, one will be surprised at the smooth convalescence of these cases, but if we operate in a hurry to suit the caprice of the patient, the folly of the friends, or the whim of the family physician, disaster is likely to crown our best efforts.

## CRANIAL AND INTRACRANIAL INJURIES\*

CHARLES K. P. HENRY

Montreal

A LARGE majority of cranial and intracranial injuries are due to automobile and street car accidents. You gentlemen may expect to see such cases in increasing numbers no matter where you practice. All traumatic head cases cannot be treated by hospital surgeons, and a proper appreciation of the nature of all such head injuries, and a correct estimation of their extent and severity, their prognosis and their proper treatment must be acquired by the successful and conscientious general practitioner.

At this clinic we shall attempt to give you a working knowledge of our methods of examination of such head injuries so as to enable you to estimate the degree of intracranial damage, as this rather than the actual trauma to the skull itself is the important factor.

Newspapers, the laity, and even medical men lay too much stress on the presence of a fracture of the skull. The only type of fracture of the skull that is *per se* of great importance is the depressed fracture. This always requires elevation, excepting the case of the small depressed "pond" fracture of infants, which will usually come out of itself. The compound skull fracture demands attention because of likely contamination and possible meningeal infection if not operated on and cared for as any other compound or open fracture. In all fractures of the skull damage to the meninges or the subjacent structures exists in ninety-five per cent. of the cases. This is what renders fracture of the skull so serious an injury. The mortality in this service† during eighteen months, up to June 1st, 1922, was 22.9 per cent.

	Total No. of cases	Total Deaths	Number operated upon	Died	Not operated upon	Died
1921.....	50	11	18	3	32	8
1922 to June 1	24	6	4	3	20	3
	74	17	22	6	52	11

Mortality—22.9%

\*A clinical lecture given November 1, 1922, to the Fourth and Fifth Years of McGill University, at the Montreal General Hospital.

†The majority of the cases in this Service were in the wards under Dr. Bazin and Dr. Eberts and by their courtesy were placed in my charge.

for all types of head injury; the accompanying table shows the relative frequency of operation and the mortality with and without operation.

Linear, stellate and other fractures of vault or vertex, or of the base, simple or compound, influence the patient's welfare in the following manner:—

- (1) The production of a laceration of the meninges or brain with resulting haemorrhage.
- (2) The opening up of the accessory cranial cavities and orifices, which are sources of potential intracranial infection and may lead to meningitis or brain abscess.
- (3) The associated lesions of nerves or blood vessels by fractures especially those through the base.
- (4) The production of increased intracranial pressure; a condition to be described later.

We find eighty to ninety per cent. of head injuries are cases of concussion of the brain, in which temporary loss of consciousness, irritability, restlessness and other passing conditions result from a bruising or shaking of the brain without permanent gross brain lesion. This bruising occurs usually at the site of local trauma and by *contre coup* at the opposite side of the cranial sphere. These patients are usually found in a state of shock when first seen, and unconscious or recovering from unconsciousness, the degree of shock often not marked, and the unconscious state neither deep nor of long duration. The blood pressure shortly after the injury is low, the pulse may be rapid or slow, depending on the degree of shock. No external signs of head injury, or only minor signs may be present as in this case before you. On admission three days ago he showed a superficial abrasion on the scalp in the right parieto-occipital region with a small haematoma and pressure here was resented—evidently causing pain. There was also early seen an ecchymosis over the mastoid and the back of the right ear. In addition he gave evidence of severe headache, which on recovery of consciousness, he referred to the frontal region. He was violent, restless, irritable, and would not, or could not talk, but he showed no motor or sensory paraly-



sis, and no alteration in normal reflexes; and no reflexes indicative of pathological conditions were present. He had received trauma to the skull posteriorly, and contusion by *contre coup* of the frontal brain area had probably taken place. Now he is conscious, rational, answers well and is apparently convalescing.

All cases of head injury should be examined locally for signs of a depressed fracture; a local haematoma may simulate this or even conceal it. Local tenderness without obvious scalp trauma often indicates a linear fracture. The x-ray may reveal such, but is, in my experience, of more value in confirming the diagnosis of fracture, than in making the diagnosis for us. In our series we have diagnosed fracture three times to once when the x-ray revealed it. Therefore I am now less concerned with the positive x-ray report of a fracture than I was two years ago when I took over the care of these cases. Moreover, it is frequently impossible for some days to secure an x-ray because of the restlessness of the patient, and in gross depressed fractures operation has to be carried out first. X-ray does, however, reveal fractures of the vault which we could not otherwise have located, though they were suspected from the accompanying signs of intracranial lesion.

(1) The laceration of the meninges or underlying brain always causes some haemorrhage and the cerebro-spinal fluid will show the presence of blood, microscopic or gross, when we do a spinal puncture. It is said a lumbar puncture may fail to show blood when the haemorrhage occurs between the dura and the bone (middle meningeal haemorrhage), but in a couple of our cases the cerebro-spinal fluid showed blood and the pressure was high with a blood clot between the dura and the bone.

(2) The opening of air and other accessory cavities or sinuses, such as the frontal, ethmoid, nasal, mastoid, or auditory, can usually be readily diagnosed, and in our routine examination we examine the nares for blood, cerebro-spinal fluid, laceration of the mucosa, and nasal and septal fracture. Air in the subcutaneous tissues about the orbit or face often indicates a fracture running down from the vault to these air spaces. The ear must be carefully examined and in about twenty per cent. of our cases we find aural bleeding and in about five per cent. an escape of cerebro-spinal fluid from one or both ears. Antiseptic and aseptic care is of the greatest importance to prevent meningitis and cleansing

must be by swabbing and packing lightly with sterile gauze; syringing is dangerous.

(3) A methodical examination of the muscles and areas supplied by the cranial nerves will often show that a basal fracture exists; the nerves oftenest disturbed are the third, the sixth, the seventh and the eighth cranial nerves. I show you here to-day a man who presented on admission paralysis of the left seventh nerve (the facial) which has remained, so he cannot close the left corner of his mouth, nor shut his eyelids on the left side. At one time we had in one ward three cases showing paralysis of the facial nerve on one side. Two of them turned out to be old cases, one showed a scar of a mastoid operation and one a scar in front of the ear lobe; both showed chronic conjunctivitis indicating an eye imperfectly protected by partly open lids. These cases often cause difficulty in the localization of the side or site of the cranial lesion. An ophthalmoscopic examination of the eye to detect the presence of any papillary oedema or optic neuritis may be made, but such examination is, fortunately for the average man, an unnecessary trouble. In our series our retinal examinations are productive usually of negative reports. I believe I have not had one case where this examination, though done in a large series by Drs. Mathewson and McKee, has helped me or the patient in the traumatic cases. On the contrary the careful clinical examination of the extra-ocular muscles and of the pupillary reflex is most important. Unequal pupils, dilated pupils, light-fixed pupils are of grave omen if persistent; the fixed pupil, if dilated as it nearly always is, in a case of deep unconsciousness with absent motor function is grave prognostic value. The general examination reveals quickly enough motor or sensory paralysis, the careful checking over of the deep and superficial reflexes and the testing for pathological reflexes, for example Babinski's, is of value. To ensure a careful general examination and record of all this I have had drawn up the forms I pass around, and on which you see there is provision made for recording all general and special examinations.

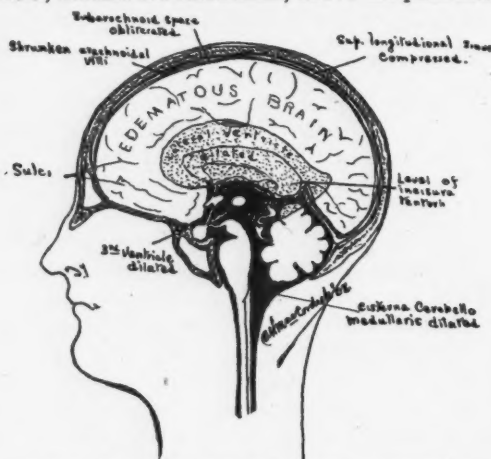
When we have finished this general examination and the scalp wounds have been examined for underlying fracture and treated surgically we are still short of securing the most important evidence needed. By this I mean the estimation of the intracranial pressure and the character of the cerebro-spinal fluid.]

(4) First let us consider what is meant by the *circulation of the cerebro-spinal fluid*. This fluid not only serves as a water bed for the brain and protects it from the jolts and jars like an automobile shock absorber, but it has a definite source, a regular flow and a steady absorption. In health and in diseases not affecting the central nervous system these three factors are so evenly balanced that its pressure as measured in the horizontal position in millimetres of mercury by lumbar puncture is from seven to nine in the adult and five to seven in the child. The active source of the secretion, the choroid plexus, is seldom if ever altered by injury or disease. The ependymal cells lining the ventricles, the pituitary gland with its stalk from the third ventricle, and the metabolic processes of the cerebral cells add also to the fluid. The quantity in the ventricles and the aqueducts is about 30 to 60 c.c. In hydrocephalus immense quantities are dammed back in the ventricular system, and I have emptied 100 c.c. from one lateral ventricle by puncture. The subarachnoid spaces hold 60 c.c., the spinal cord about 20 to 30 c.c., so we have a normal total quantity of about 120 to 150 c.c. Its flow is outwards towards the fourth ventricle, then via the foramina of Majendie and Lusk to the large cisternae at the base of the brain, around the cerebellum, above the pons and

the main cranial cavity by passing through the intertentorial space which is well filled by the mid brain.

The negative or low pressure in the venous sinuses, the pressure of gravity from the ventricles to the base and the regular pulsation of the brain are the forces that keep this fluid moving. Now when trauma occurs haemorrhage adds to the fluid content and the damaged brain and subarachnoid areas about it interfere and often block a part of this absorbing path. Back pressure results, the increased intracranial and intraventricular pressure pushes the brain against the skull, flattens the sulci and convolutions and interferes with the flow into the sinuses. The pressure on the floor of the fourth ventricle causes a rise of blood pressure, a slowing of the pulse and respiration, and the symptoms we commonly call medullary oedema or pressure. The intertentorial space is enroached upon by the rising and swollen brain and absorption is still more interfered with, and thus a vicious circle is established. If you do a lumbar puncture you find blood in the fluid withdrawn and the pressure reading is above normal.

Lumbar puncture, which I will now carry out on this first case, is the best procedure I can offer you for the reduction of this increased intracranial pressure. It is also the only accurate way I know of estimating the amount of pressure. Cerebral oedema occurs with increase of pressure and will often prove fatal, or if not high enough or long continued enough to lead to a fatal ending may cause secondary fibrosis or gliosis of the cerebral cells with the familiar delayed symptoms of cerebral injury; persistent headache, loss of memory, and a disinclination or inability to concentrate on any work. In a large series of head cases with a "follow up" examination ten per cent. of such cases of fractured skull were found to have degenerated into social derelicts. On admission three days ago this case had a puncture done and the fluid was red, and under pressure; the procedure was extremely difficult because of the restlessness and irritability of the patient. No reading was taken of the pressure. In this test tube you see the red fluid after we shake it to mix the blood and the supernatant clear fluid. The next day he was partly conscious and (forty-eight hours ago), I did a lumbar puncture and secured this pinkish fluid at a pressure of 20 m.m. of mercury, which I reduced to 10 m.m. by withdrawal of about 15 c.c. Today you see he can talk and is less restless, has

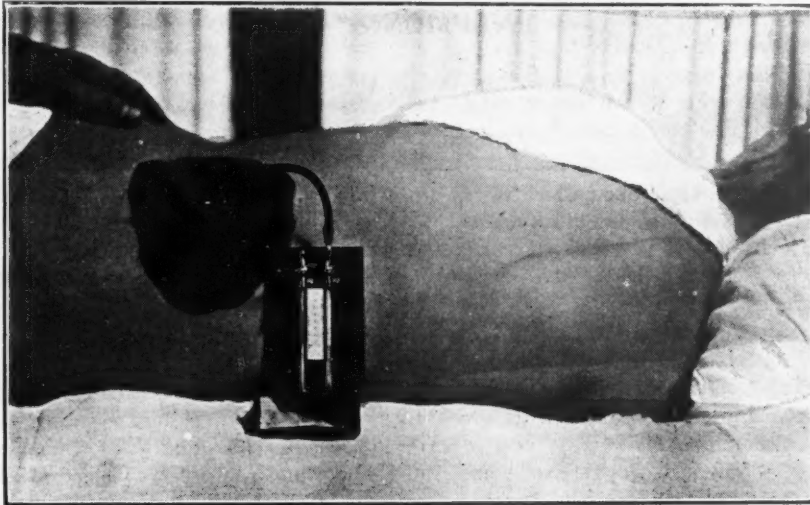


**INCREASED INTRACRANIAL PRESSURE.**  
**Absorption Blocked**

then passes by channels up over the hemispheres beneath the arachnoid towards the sinuses, especially the superior longitudinal, where it is absorbed by the villi and Pacchionian bodies. Some of it is taken up by the perivascular lymphatics. The fluid to be absorbed must enter

regained his bladder control, takes fluids, and now you see the fluid is brownish and turbid and the pressure is only 10 m.m. You note that we turn the tap so as not to allow the fluid to escape before we take the reading, as a few c.c. make considerable difference in some cases. Usually not more than 10 to 15 c.c. is enough to reduce the pressure fifty per cent., but it should not be reduced below 10 m.m. at any time in the adult. We use this graduated tube to collect the fluid, and the reading is easily seen on the mercury scale in the enlarged photograph I pass around. Cloudy fluid is

the hospital. Some, of course, have temporary or permanent disability, as in case 2 shown here with paralysis of the right upper extremity and the left side of the face. As soon as pressure is relieved the cases regain consciousness, or if conscious, become brighter, and the headache is often promptly and completely relieved. There is apparently no danger in spinal puncture in a horizontal posture in head injuries if the fluid withdrawn is not too great in amount, from 10 to 15 c.c. for the first puncture; and it has never been necessary to withdraw more than 20 c.c.



Spinal Manometer *in Situ*.

examined microscopically for bacteria and red cells, and a culture is taken when meningitis is suspected. One case now downstairs showed at the first puncture, clear fluid with a cell count of eight to fifteen red cells per field, and to-day his fluid is distinctly cloudy. The fluid is usually red or pink; our readings show pressures from twenty to thirty-five in severe, and from twelve to twenty-five in moderately severe cases.

By repeated punctures the intracranial pressure can be controlled better than by a subtemporal decompression as carried out by Cushing. In cases without depressed fracture or without gross meningeal or subdural haemorrhage I believe this treatment offers a better chance for cure than by such an operation. Since June, 1922, I have operated on only one or two cases, and with the exception of two or three cases dying within a few hours of admission with gross cerebral and other lesions, where no operation could have been of value, all cases have walked out of

at any time to secure a sufficient reduction of the pressure.

Let us summarize our procedure:

(1) Examine the patient generally, noting gross physical injuries and minor scalp or skull injuries.

(2) Note the intelligence, whether rational or not, test the memory, if conscious, and the other mental functions.

(3) Examine for motor and sensory disturbances, and for normal and abnormal reflexes, superficial, deep and organic.

(4) Examine the function of all the cranial nerves, especially the third, fourth, sixth, seventh and eighth.

(5) Record all findings at the time of first and subsequent examinations, noting pulse, respiration, temperature and blood pressure.

(6) Do a lumbar puncture; if high, reduce fifty per cent.; repeat in twelve or twenty-four hours, whether first shows blood or increased



pressure or not. Cerebral oedema may follow even where primary signs of increased pressure are wanting. Repeat every day or second day where pressure is high, irritability persists and unconsciousness is present. When the fluid is normal, no further puncture is needed after the second or third.

(7) Absolute rest in bed must be carried out

for from two to three weeks after pressure becomes normal. Ice to the head, and morphia or other sedatives are required in most cases of cranial injury.

(8) Freedom from mental or physical work is desirable for at least one month more where the cerebro-spinal fluid has shown the presence of blood or any increased intracranial pressure.

## PNEUMONIA\*

GEO. G. MELVIN, M.D., D.P.H.

*Fredericton, N.B.*

IN casting about for a topic upon which to say something in some way timely and practical and also in as few words as possible, it occurred to me that no subject would better fit the occasion than pneumonia.

That it is a trite topic no one will deny; trite, not because of its relative novelty, but because of its absolute age, an age amply sufficient for our ancestors of many generations back to have expended their wisdom upon.

"Lung Fever" to give it its Anglo-Saxon name, since vital statistics became common to most countries of Western civilization, has been the greatest cause of mortality of any single disease in the Standard or International List. While this statement may not be exact as to every year and of every community publishing its death returns, yet it will be found to be so in all considerable communities during the lapse of a considerable number of years.

In our own province, though our figures cover only a year or two, pneumonia maintains its ill-omened reputation. During the year 1920, in New Brunswick, exclusive of Kent, there died of pneumonia and its close congeners, broncho-pneumonia, pleurisy, pulmonary congestion and pulmonary gangrene, 547 persons making a mortality rate of 151.51 per 100,000 people. If, in addition to this, are added twenty-nine other deaths attributed to acute bronchitis, deaths more than likely to have been disguised or unrecognized pneumonia, there is presented a list of not less than 576 pneumonia deaths in this

province in a single year, exclusive of one of its average sized counties, and exclusive of the due proportion of pneumonic deaths in 1,000 deaths registered during that year without definite cause of death stated.

Contrasted with these figures, the mortality from tuberculosis in all its forms of 390, a rate of 108 per 100,000 takes a decidedly second place. Even senility or old age bulks but 461, or a rate of 128 per 100,000 while the intestinal diseases of children under two years yielded a harvest of only 303, or a rate of 84 per 100,000, and cancer 266 deaths with a rate of about 74. Certainly, there can be no question of the gravity of pneumonia amongst us as well as with those of the north temperate regions, generally. Yet no great outcry is made with respect to it. It carries off the young, the middle aged, and the old with an impartiality striking in its simplicity each year, only relaxing its activities from May to September. Even during these months of relative warmth forty-seven males and twenty-seven females died of direct lobar pneumonia in New Brunswick in 1920.

Compared with tuberculosis its morbidity is less. The one is, in general, prolonged in its progress, the other, sudden and brief. Of all deaths, however, that from tuberculosis can best be prepared for: that from pneumonia, apart from accident, perhaps the least. No disease, therefore, ordinarily, causes such wide-spread distress, in every meaning of the term, as does pneumonia. It comes unheralded, strikes savagely and surely and leaves the physician embarrassed and the family concerned, often in

\*Chairman's Address, Section of Medicine, New Brunswick Medical Society Meeting, July 18th, 1922.



ruin. No laboured explanations can assuage the blow, nor can any assurance by the preventive authorities be given that it may not be repeated at any time or in any place.

These are melancholy admissions to be forced to make in this age of precise and successful treatment, and amidst the triumphs of preventive medicine. We hear much, and deservedly so, of the ravages of cancer and of the unwearied efforts that are constantly being put forward to throw light upon this disease and consequently, to obtain a better control of it. Yet pneumonia presents a question of about twice the importance of cancer, if we dare measure the importance of any cause of death by its activity.

But the problem involved in cancer is much wider than that in pneumonia. The pathology of the former is really wrapt in obscurity: that of the latter has long been well understood in all its outstanding characteristics. It is in treatment that the two diseases maintain their sinister and equal preeminence, and it is almost impossible to speak of the treatment of pneumonia without that confusion which invariably accompanies non-success and defeat in the hands of the honest.

For that reason it is not only disagreeable but useless to attempt to review at any length the history of the treatment of pneumonia during, say, the past forty years. It has ranged from pure empiricism down to the dictates of stilted and wholly ineffectual theory. Bacteriology, to which medicine owes so much during the past half century has done practically nothing so far as this disease is concerned. We talk learnedly, but not wisely, of the pneumococcus and its multitudinous varieties: we purge and abandon purging: we reduce temperature by means which even the most robust in the prime of health could hardly sustain, and again permit it to run its high course in the futile hope that it is nature's method of destroying the specific germ. We drug to the point of toxicity and presently abandon all drugs as not only useless but vicious and inimical. Alcohol was the sheet anchor yesterday; to-day it is reprobated by a large part of the

profession. We leap from theory to theory; we pathetically pin our faith to applications and preparations which are more than half nostrums and which are wholly useless, and finally resign our patient to what we hope will be the common-sense and tender handling of the trained nurse.

Is it a consequence of this erratic course, or is it in spite of it that pneumonia maintains its enormous stride at the head of death's procession? This may well be called a vital question and one we should commend to ourselves for grave consideration. And, indeed, it is for this very purpose that I here present this simple note. In the way of improved treatment I have nothing to suggest, and as one engaged in the public health service I confess to an almost equal ineptitude so far as this disease is concerned. It has been made notifiable, it has been quarantined, it has been fumigated—all the useful and useless restrictions of sanitary science have been applied to it times without number and in the most diverse places without the smallest appreciable effect either upon its incidence or mortality. Enthusiasts of the moment both in treatment and prevention, will, I do not doubt, repudiate the assertions here expressed, and confidently show that this disease, as it has always been, is just now on the point of eradication by methods, all their own, of either "up-to-date" treatment, or equally "up-to-date" prevention. While we doubt, let us, at the same time, pray that our sanguine friends, some of them, against all bygone experience, may achieve success.

But the declaration of this pious wish is not the incentive of this note. My only purpose is the expression of a saner and more rational hope, and that hope is that some younger man, listening to me to-day, or reading these words elsewhere, gifted with the requisite information, ability, judgment and modesty, may take up this question of pneumonia, and pursuing it patiently at the bedside and in the laboratory, may finally so disentangle it that his labours will confer immortality upon himself, and prolonged life upon humanity in general.

## HEMOLYTIC STREPTOCOCCIC INFECTIONS IN CHILDREN

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THE circumstances which led up to this study may be stated briefly as follows:

Not long after becoming associated with the Hospital for Sick Children, we were impressed with the frequency with which cultures from various types of inflammatory lesions showed the presence of hemolytic streptococci. We also noticed that a large number of the cases coming to post mortem had died as the result of an infection with this organism. Still later we observed that many of the fatal cases originated as inflammatory lesions of comparatively little significance, but which nevertheless, from some cause or other, progressed to a fatal termination. With a view towards determining the mortality in these cases, the seasonal incidence and the more common types of primary lesions, we have made a study of all the cases during the two and a half years ending December 31st, 1921, from which this organism was isolated either in pure culture or in conjunction with other organisms.

The series includes patients who were admitted to the wards of the hospital and also some who attended the Out Patient Department. Cultures in every case were made on glucose broth and on sugar-free blood agar plates, using citrated human blood. In all cases in which "septicemia" is reported, this diagnosis was confirmed by positive blood culture findings.

The types of lesions produced by this organism are of great variety, involving almost every tissue in the body and including such conditions as erysipelas, cellulitis, osteomyelitis, pneumonia, empyema, pericarditis, peritonitis, meningitis, septicemia and many others. From this we can readily see that vital statistics are of no value in endeavouring to determine the proportion of deaths due to an infection with this organism. In order, therefore, to arrive at any definite conclusions, we have gone over our records for the past two and one-half years and present our findings herewith. The number of cases forming the basis of this study totals 350. Males were more commonly affected than were females, there being 215 males and 135 females. There

were 156 fatal cases, but in eleven of these death was due to some cause other than the streptococcic infection, such as tuberculosis, congenital syphilis, malnutrition or some other disease. Deducting these eleven cases, we still have a total of 145 cases in which death was due to the hemolytic streptococcus, the mortality rate being 38.6%. While this figure represents the mortality in our series, it no doubt is rather high as there were during this period quite a few cases of tonsillitis from which cultures on blood agar were not made, and who made a good recovery.

The seasonal incidence of these cases with the corresponding number of deaths may be graphically represented as shown by Chart "A". Thus we see that the months of the year in which the greater number of these cases occur are the winter and early spring months; January, Febru-

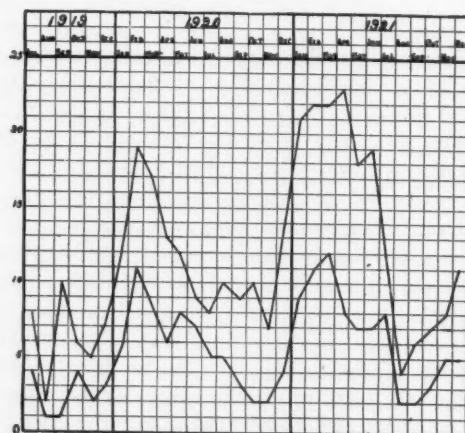


CHART A.—SEASONAL INCIDENCE

Upper line, No. of cases of streptococcic infection.  
Lower line, No. of deaths per month due to streptococci.

ary, March and April being the worst. During this period there is also a corresponding increase in the number of deaths. In the summer months, and particularly in the month of August the cases are considerably less numerous. During the

two and one-half years which this study covers, there were in the hospital 1,333 deaths from all causes. When we consider that 145 of these, or almost 11%, were due to a common cause, that cause being the hemolytic streptococcus, we begin to realize the important part which this organism plays in the production of disease and in the mortality rate, particularly among children. By comparing the deaths per month due to the streptococcus with the total number of deaths from all sources, as shown in chart "B", we make this interesting observation that, during the months of August, September and October in each of the three summers, the total number of deaths was the highest, while the number of deaths from streptococcal infection was the lowest. The explanation of this lies in the well known fact that during these months respiratory infections are comparatively uncommon, while intestinal disturbances are very prevalent.

When we come to study the age incidence of these cases, it is interesting to note that while the ages vary from a few days to fourteen years, 114 cases, or almost 30% occur in infants under six months of age. This fact is illustrated in chart "C". From six to twelve months there are twenty-five cases, and from here on, with few exceptions, there is a gradual but steady decline in the number of cases as the children grow older, until we reach the age of fourteen years, of which age we have only four cases to report. The significance of this appears to be that infants are very susceptible to this type of infection, and the death rate is high, as is shown by the chart.

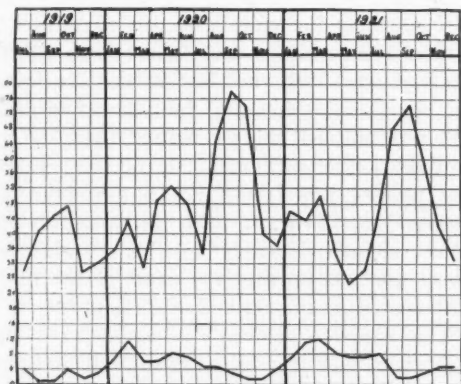


CHART B.—COMPARATIVE T.

Upper line, No. of Deaths per month—all causes.  
Lower line, No. of Deaths per month—due to Streptococci.

#### ANALYSIS OF CASES

Group	Cases	Deaths	Percentage of deaths
1. Pneumonias (not secondary to streptococcal infections elsewhere in the body).....	42	20	48
2. Primary lesions other than pneumonias.....	51	16	31
3. Infected wounds.....	49	8	16
4. Cases associated with scarlet fever.....	7	2	29
5. Tonsillitis, nasopharyngitis or otitis media without secondary lesions...	33	0	0
6. Cases originating as nasopharyngitis, tonsillitis or otitis media in which the lesions did not remain localized to these areas.	128	75	58.6
7. Erysipelas.....	17	13	66
8. Omphalitis.....	14	13	93
9. Unclassified.....	11	6	54

*Group 1.—Cases of pneumonia not secondary to streptococcal infection elsewhere in the body.* Number of cases, forty-two. The ages varied from twelve days to thirteen years; average, five years, eight months. This group includes all the cases of bronchitis, broncho-pneumonia and empyæma due to hemolytic streptococcal infection, which did not appear to be secondary to such conditions as nasopharyngitis, tonsillitis or otitis media caused by the same organism. Fourteen of these cases were secondary to such conditions as measles, influenza, malnutrition, fermentative diarrhoea, or some other disease. In eight cases hemolytic streptococci were found associated with other organisms; pneumococci, five cases; staphylococcus aureus, two cases; an unidentified Gram negative bacillus, one case. Twenty-two cases, or over 50%, developed empyæma, with seven deaths and fifteen recoveries. The number of deaths from all causes, twenty. The number of recoveries, twenty-two. Three of the forty-two cases had septicæmia, all of which died. The percentage of deaths in this group is 48%.

*Group 2.—Primary lesions other than pneumonias.* Number of cases, fifty-one. The ages varied from two weeks to twelve years. Average eight years, 8 months. This group includes ten cases of primary peritonitis with only one recovery; eight cases of osteomyelitis with seven recoveries; and thirty-three other cases in which the lesion was an arthritis, a septicæmia, a meningitis, or some other condition which did not appear to be secondary to a lesion elsewhere in the body. The percentage of deaths in this group due to streptococci is 31%. Two other cases

died, one of malnutrition and one of pulmonary tuberculosis.

*Group 3.—Infected Wounds, Burns, etc. Number of cases, forty-nine.* The ages varied from seven days to fourteen years, average, seven years. Beside the infected wounds, which include lacerations, abrasions, compound fractures, etc., there are included three cases of infected burns and nine cases of infected tuberculous sinuses, none of which died. Among the cases of actual wound infection there were eight deaths, or 16% of the total number in the group. An interesting point about this group is the higher average age (seven years) associated with a lower mortality (16%). It would seem to indicate that older children withstand this type of infection much better than do infants.

*Group 4.—Cases Associated with Scarlet Fever.* Number of cases, seven. The ages varied from three to twelve years, average seven years. Only one of the cases showed no secondary lesions. Of the others, two had arthritis, two mastoiditis, one cervical adenitis, one septicemia and one meningitis following mastoiditis. The last two cases died. The percentage of deaths was 29%.

*Group 5.—Cases of tonsillitis, nasopharyngitis, otitis media and conjunctivitis without secondary lesions.* Number of cases, thirty-three. The ages varied from one month to fourteen years; average five years, four months. These patients were either cases of primary infection of these areas, or those in which the conditions developed during the course of some other illness. The interesting point is that there are only three deaths in this group and these were all due to other causes, one patient dying of post-diphtheritic paralysis, one of congenital heart and one of pulmonary tuberculosis.

*Group 6.*—We now come to a group of cases which is of comparatively more importance, first of all, because of the high mortality, and, secondly, because the fatalities are secondary to what may be considered comparatively minor lesions. These so called minor lesions are the same as those in the preceding group, viz., tonsillitis, nasopharyngitis and otitis media, but this group differs from the former in that the lesions in these cases did not remain localized to these areas, but became more or less general, with in many cases, fatal results. The number of cases in this group is 128. The ages vary from two weeks to thirteen years. Under six months of age there were twenty-eight cases; from seven to twelve months, twenty-nine cases; and over one year

of age eighty cases. The number of deaths was seventy-nine, but of this number four were due to other causes, leaving seventy-five deaths due to streptococcal infection, or a mortality rate of 58.6%. One history rather typical of this group may be recorded here:

Patient Eva E., age seven years, female, was admitted to hospital September 15th, 1919, giving a history of sore throat and fever commencing ten days previously. Two days later she complained of pain and tenderness behind her ears. On September 10th (five days before admission) her ears commenced to discharge; and with the

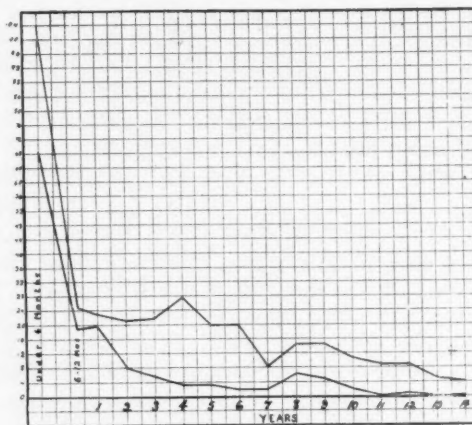


CHART C.—AGE INCIDENCE

Upper line. No. of cases according to age.  
Lower line. No. of deaths according to age.

discharge the pain was lessened. On the day of admission the temperature was 104.4°F., and she complained of pain in her left elbow and left wrist. Her white blood count was 33,000. On September 18th, the blood culture was positive for hemolytic streptococci and the same organism was isolated in pure culture from the ears and the left elbow joint. On September 20th, the patient was transfused, but without any marked improvement. She ran a septic temperature and ultimately died on October 8th, about one month after the onset of the illness, with septic pneumonia and acute nephritis.

This sequence of events is repeated over and over again in this group of cases until it cannot help but impress on one's mind the importance of sore throat and middle ear disease in children. Some idea of the course of the infection and the final outcome of these cases may be obtained from the following table:



Septicemia developed in 38 cases with only 2 recoveries.				
Peritonitis	"	7	"	0
Broncho-pneumonia	"	22	"	2
Septic pneumonia	"	12	"	0
Empyema	"	6	"	2
Arthritis	"	9	"	0
Pericarditis	"	2	"	0
Osteomyelitis	"	4	"	2

Of the twenty-one cases which developed intracranial lesions, fifteen had meningitis, six had thrombosis of some, or all of the intracranial venous sinuses, one had a cerebellar abscess and one had a cerebral abscess. All of these cases died.

We might mention that the two cases of septicemia which recovered were cases which had been exsanguinated and transfused.

*Group 7.*—This group includes the cases of erysipelas from which the hemolytic streptococcus was isolated. The number of cases is seventeen. The ages varied from seventeen days to six months, the average being eight weeks. In eight of the cases the erysipelas originated in the region of the head, (eyes, ears, nose, face); in seven it originated in the region of the buttocks, scrotum, penis or vulva, and in two it began at the umbilicus. Blood cultures in every instance were positive. The number of deaths was thirteen, or there was a mortality of nearly 66%. These cases may be divided into two groups; first those exsanguinated and transfused, and, second, those not transfused. Of eight cases not transfused, eight, or 100% died. Of nine cases transfused only five, or 55% died: Reduction in mortality of 45%.

*Group 8.*—The Cases of Omphalitis. While this is a comparatively small group, yet it is an important one, in as much as it is attended with a very high mortality. There are fourteen cases in the group, two of which are also included in Group 7. The mortality was 93%. The ages of these patients varied from eight days to one month, only two were over three weeks, and the average age was seventeen days. All of these cases began as an inflammation of the umbilicus, but in only one case did the inflammatory condition remain confined to that area. This was the only case to recover. In the remaining thirteen cases, all of which terminated fatally, a variety of lesions developed. Peritonitis occurred in nine cases, septicemia in nine cases, erysipelas in two, multiple abscesses in two, peri-

carditis in one and gangrene of feet and hands in one.

*Group 9.*—This is a group of unclassified cases which totals eleven in number, and includes a few rather rare cases. For example, one patient died as the result of cellulitis following a streptococcal infection of chicken pox. Another patient died apparently of septicemia and pneumonia following an alveolar abscess. The ages varied from nine months to thirteen years; the average age being two and one-half years. Of these eleven cases, six died as a result of the infection, while one died of pulmonary tuberculosis.

#### Summary:

- (1) Males are more commonly affected than females.\*
- (2) Nearly 40% of all the cases were fatal.
- (3) The greater proportion of cases occur during the months of January, February, March and April.
- (4) Very few cases occur during the months of August, September and October, during which months the death rate from other causes is the highest.
- (5) Almost 11% of deaths from all causes are due to infection with this organism.
- (6) Infants are very susceptible to this infection, 30% of all cases occurring in babies under six months of age.
- (7) 44% of the cases of broncho-pneumonia\* developed empyema, 40% of which cases died.
- (8) 90% of the cases of peritonitis died.
- (9) Over 50% of the deaths in this series followed upon tonsillitis, nasopharyngitis or otitis media.
- (10) Erysipelas in infants is frequently associated with septicemia and when this is the case with ordinary methods of treatment, it is usually fatal.
- (11) Practically all cases of umbilical infection die.

In placing these rather discouraging facts before the medical profession, we wish to ask this question; can anything more be done by either prophylactic or therapeutic measures by which, in the future, many of these young lives may be saved?

\*This includes the cases in groups 1 and 7.

## THAT BANEFUL CATHARTIC AFTER ABDOMINAL OPERATIONS

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AN article appeared in the November number of *Surgery, Gynaecology and Obstetrics* entitled "The Harmful Use of Cathartics After Abdominal Operations," by Dr. Long, of Oklahoma. It was gratifying to note that some one has the courage to openly anathematize cathartics in this connection. It is especially pleasing to any who hold similar views, to see a man in an influential position such as his, with pronounced convictions on a subject so important. It is true, opinions differ widely on this question. Many may oppose his teaching. Personally, I hold that his contentions have been proven by experience and are consistent with sound reasoning. I have for a long time felt, that in the interests of humanity an effort should be made to bring before the profession the advantages of omitting the time "dishonoured" dose. No doubt, there are not a few holding the same belief, who have kept silent to avoid controversy. It always seemed to me, before departing from the orthodox practice, that there was room for improvement in the post-operative management of this type of case. The popular method especially in severe peritonitis, was decidedly unscientific. The futility of employing the measures recommended in standard works, demanded a change. If dosing were useless, I resolved to make the sufferer comfortable and let nature do the rest. Since then I have not changed my attitude. Further experience and closer observation have served to confirm rather than alter my convictions. Since adopting present methods, I have treated in the neighbourhood of two hundred cases, practically along the lines Dr. Long has laid down. The results have been such, that I have no inclination to revert to the old practice. Up to the time of writing, I have adhered rigidly to these principles in above one hundred and thirty cases in one of our local hospitals. These representing every variety and degree of peritonitis, were treated surgically by myself and in no case was a post-operative cathartic given. There was no mortality in this list. Considering their respective states at the time of operation, their con-

valescence might be called pleasant, as contrasted with similar cases before changing my tactics. Let us begin with the clean case, for example the common interim appendix. How many times have we seen the patient bright and quite normal on the third morning? According to recognized usage, he is given a dose of calomel. Next visit he is restless and more miserable than on the day following operation. It now requires seventy-two hours to recover what was lost. It reminds one of the frog jumping out of the well. This is done in the name of science. One cannot expect whipping to overcome a functional paralysis of the bowel, when such is better accomplished by quiet. Rest is essential to repair. Why worry in this type of case? It matters little whether the bowels move or not, until new conditions develop. Bowels never die in a flat abdomen, much less in one which is by this time nearly scaphoid. They will resume their normal functions, when normal tone returns. Twenty ounces of saline daily for three days, administered by Murphy drip will usually do all that is required by the time the gut has recovered. If not, the enema given on the fourth or fifth day as Dr. Long suggests, will remove any obstacle from the colon and do all that is necessary. I have been leaving the enema off until the fifth or even sixth day, as I believe it to be of advantage in certain cases. I rarely give a cathartic before the eighth day and I even think it better deferred, in the majority of cases, until the patient goes home. A hot seidlitz powder may be desirable at the end of the first week, if the patient lose his relish for food. To prevent an adhesive exudate from forming on the surface of the bowel abraded by handling, it is as necessary to withhold cathartics after operation, as immediately before, to avoid the congestion that naturally attends an artificial diarrhoea. This is quite the opposite of the view held by many, but I have had less trouble from adhesions since adopting this principle. So much for the mild case; consider now the acute abdomen. Under this heading, we will include every variety and degree

of inflammation, from a moderate local reaction to a generalized peritonitis. In this type of case the cathartic is not only contraindicated but is harmful, and at times exceedingly dangerous. Allowing that the cathartic given at the customary time works well, what will more effectively spread an infection over the abdominal cavity, than active peristalsis? Is this to be desired? Nature usually permits the intestine to function normally, after she has built up a limiting wall at the site of the invasion. The calomel zealot unwittingly defeats that which he strives to attain. In the distended abdomen purgatives are worse than useless. The more calomel, salts and croton oil, one pours in, the tighter will nature put on the brakes, reflexly. Remember that distention is not at first paralytic, but rather an indication, that nature would put the bowel temporarily out of commission to limit the spread of infective material. When this stage is overdone, a genuine intestinal paralysis supervenes on a functional. I have been able to demonstrate time after time that untoward conditions are produced and evil symptoms aggravated by everything introduced into the stomach. That anything in the stomach is undesirable is proven by the incessant vomiting seen in many of these cases, which in the more desperate becomes effortless and gushing. It has been noted that this distressing feature is more in evidence after a purgative has been administered and greater distention has occurred. Anything put into the stomach excites peristalsis, but when normal peristalsis is impossible it is forcibly ejected. The main indication here is to assist the stomach in getting rid of its foul contents before more perverse conditions develop. The stomach tube and a pitcher of water is all that is required and a great relief it is to the patient. A solution of sodium bicarbonate is preferable to plain water, especially in any degree of gastric dilatation. It is pleasing to note that the stomach tube is daily coming more into prominence in cases of this kind. While a little disagreeable to swallow, it is very efficacious, and is better employed before the patient is in a state of collapse.

While I am not giving a dissertation on the treatment of peritonitis, the reader naturally expects an alternative when cathartics are interdicted. I would like in this connection to emphasize the value of certain other measures in this distressing condition. There is nothing so ridiculous as the old teaching that morphin produces intestinal paralysis. It does not, unless used in

toxic doses. There is nothing quite so beneficial as morphin with atropin given hypodermatically. Morphin will lock up the bowels in a normal abdomen, but the effect is quite the opposite in the presence of distention. This I have proven to my entire satisfaction a number of times. Whatever dosage is necessary to quiet the patient, will relax and promote the expulsion of gas. With the aid of the stethoscope, borborygmi can usually be heard within twenty minutes in an abdomen that has been silent for hours. This with the assistance of enemata helps to prevent overdistention and the gut will gradually recover its tone. There is nothing to justify one in letting these patients suffer, when a quarter grain of morphin will relieve pain and apprehension and induce a needed sleep. This may be repeated if necessary in a few hours. There is nothing to contraindicate quarter grain doses in the adult and proportionate doses for children. It is well to combine one hundredth of a grain of atropin with morphin when the effect of a single dose is desired, but if the dose is likely to be repeated, the standard dosage of 1/150 of atropin is preferable. Further medication is not necessary. The instillation of saline by Murphy drip, if retained, and sodium bicarbonate solution to maintain alkalinity, or glucose, as is commonly used in threatening acidosis, will be quite sufficient. Dilution is of paramount importance to combat toxæmia and prevent dehydration. It is essential that these patients get all the rest possible. Too many are nursed and "doctored" to death. A little assurance will go a long way in helping the sick to recover. If he be a smoker light up his pipe. Although it may be distasteful to him at the time, it must not be forgotten that the pipe is quite as efficient as atropin in assisting the expulsion of gas. I once saw a cigarette produce marked results in a stubborn case of tympanites. The physiological side of the discussion is familiar to most of us. To such as care to refresh the memory, it will be found that the action of morphin and atropin on the nervous mechanism of the bowel is quite in keeping with my contentions. There is still something to be learned about the sympathetic nervous system.

No apology is necessary for the repetition of well known facts. The seriousness of the subject justifies reiteration for emphasis. While my statistics to date are neither large nor complete, I have observed enough from this practice to warrant the stand taken. Before adopting

present methods, my results were scarcely the average, since then they have exceeded my greatest expectations. I could not conscientiously administer nor recommend a post-operative, cathartic to any abdominal case. I do not hold that all desperate cases will recover, even

under the best management. The virulence of the infection and individual peculiarities have much to do with determining the issue. Barring the unusual, if the patient's condition will admit of proper peritoneal toilet, we should expect a favourable outcome.

## ANALYSIS OF SIXTY CASES OF GASTRIC ANACIDITY ASSOCIATED MAINLY WITH CHRONIC DIARRHOEA AND PERNICIOUS ANAEMIA\*

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**S**IXTY cases of gastric acidity, occurring in my private practice, have been analysed to illustrate mainly the diagnosis and treatment of certain forms of chronic diarrhoea, and the early diagnosis of certain types of pernicious anaemia.

Gastric acidity is frequently found in apparently healthy persons, especially beyond middle age; it is often present in cancer of the stomach and abdominal cancer generally, in long standing cases of gall-bladder disease and chronic appendicitis, in chronic cardiac, pulmonary, hepatic and renal disease, as well as in disorders of the thyroid and suprarenals: such cases are excluded from the present paper.

Though the association of gastric acidity with chronic diarrhoea and with pernicious anaemia has been recognised for many years, yet the practical importance of the subject is not sufficiently appreciated by the general practitioner.

**I. *Gastrogenic diarrhoea***—In many cases, a careful history of the patient suffering from chronic diarrhoea should be sufficient in itself to arouse suspicion of its gastric origin. Thus in 18 of 29 cases of chronic diarrhoea, associated with gastric acidity, the diarrhoea occurred mainly, either in the early morning before breakfast, or immediately after meals, or on both occasions; in the remaining 11, diarrhoea followed on chilling in 3 cases, and quite irregularly in the other 8. These peculiarities of *gastrogenic diarrhoea* have been pointed out

by many observers, *e.g.* recently by Vander-Hoof.

Sex, age and race: 17 were females and 12 males; 2 occurred in individuals over 60; 8 between 50 and 60; 7 between 40 and 50; 8 between 30 and 40, and 4 between 20 and 30 years of age; 4 belonged to the Jewish race.

Duration of diarrhoea when first seen: less than one year, 5 cases; 1-5 years, 11 cases; 5-10 years, 3 cases; 10-20 years, 4 cases; over 20 years, 6 cases. Number and type of motions: 3 to 7 motions daily on an average up to 20 daily; loose, watery without blood, occasionally said to contain mucus; usually with little or no pain, though sometimes with colic which was exceptionally severe.

The diarrhoea was usually in spells, lasting a few days up to a week or two at a time, with intervals of freedom for weeks or months, when the stools might be constipated, though often said to be soft; sometimes there was almost continuous diarrhoea for months, occasionally for a year, but this followed shorter spells of looseness of the bowels. When the diarrhoea was severe, the motions might occur at any time of the day or night, though in eighteen of the twenty-nine cases, as stated, they occurred mainly or entirely in the early morning or after meals.

Condition of the mouth: in four cases, the teeth and gums were noted as above suspicion; in the majority, the teeth were bad, or there was a history of bad teeth, extracted prior to the first examination. Other infections: In four, severe anaemia of the pernicious type was present, and

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in one case, a mild tubercular infection of the lungs, not regarded however by the specialist as having any bearing on the diarrhoea.

The general health was usually good, apart from the pernicious anaemia group, though many complained of tiring too easily and of lack of "pep", and in seven of these, there was moderate or even severe secondary anaemia; *e.g.* in one case, red blood cells were 5,360,000 with 65% haemoglobin, and 9,600 whites, while in another, the red cells were 3,400,000 with 50% haemoglobin, and 10,800, whites. Gastric symptoms were not prominent; a few complained of gas and fullness in the epigastrium or left hypochondrium after food; in two, occasional vomiting.

Gastric contents: Test breakfasts were given to all; in many, this was repeated at varying intervals, and in a few, test dinners were also given: fractional gastric tests were not made in these private cases, but in similar cases, met with in the public wards of the hospital, fractional tests simply confirmed the ordinary tests. The amount recovered from the stomach was usually small, a few teaspoonfuls to a few ounces; the bread was generally poorly digested, often quite coarse particles blocking the stomach tube and making aspiration difficult; in several cases so little was obtained that a second test breakfast was necessary to complete the examination. In all cases, free hydrochloric acid was absent (some cases with subacidity with similar symptoms are excluded from this paper); blue litmus paper was unchanged in 10, while in the others, the total acidity varied from 0 to 16, except in one case, where it reached 32; lactic acid was present in 2; occasionally there was considerable mucus intimately mixed with the food remnants; there was no pus but traces of bright blood were repeatedly seen, evidently from traumatism by the stomach tube. No examination was made of the gastric ferments or of the stools.

It will be objected with apparent reason that the absence of fractional gastric tests, of ferment and stool examination makes the record of these cases very imperfect, but my excuse for the paper lies in the satisfactory treatment of this type of diarrhoea—a treatment which has not yet passed into general use. Thus in only three of the twenty-nine cases had test breakfasts been given prior to my examination; a sufficient commentary on the need for further emphasis of the condition.

*Aetiology of the anacidity*—The presence of much mucus intimately mixed with the gastric con-

tents indicated in a few cases a chronic gastritis for which poor teeth and infected gums were possibly responsible; pernicious anaemia was associated only in four cases, but for the great majority, no cause for the gastric anacidity could be determined though some cases were followed for many years with no hint of the development of anaemia or its tongue and spinal cord complications.

The cause of the chronic diarrhoea itself is less obscure: the complete absence of hydrochloric acid in the stomach prevents the preliminary digestion there of proteins and of the cellulose enclosing vegetables and even bread; it allows this poorly broken up material to pass more rapidly into the intestine by the breakdown of the normal pyloric reflex controlled as this should be by free hydrochloric acid; it interferes with the normal stimulus to the pancreatic secretion, and to the flow of bile, excited as these are by the presence of acid in the duodenum (though both secretions have been shown to pour into the bowel even in the absence of the usual stimulus) and lastly the disinfectant influence of hydrochloric acid is absent, allowing of the readier passage of infective material into the bowel. The intestines therefore have more work to do; in many cases, full compensation is maintained and the individual is quite healthy, but with a narrower margin of safety; carelessness in diet, infective material taken with the food, nervous excitement, and chilling of the body, throw additional work on the bowel; functional disorders of the intestine develop—sometimes actual catarrhal conditions follow with accompanying diarrhoea.

The treatment of gastrogenic diarrhoea was satisfactory in the cases which could be followed for a sufficient time—sometimes for many years—to admit of a definite opinion. In severe cases the patients were kept in bed for a few days to a week, but in the majority, this rest treatment was not necessary. The mouth was carefully freed from sepsis, a dentist's co-operation being insisted on where necessary, to treat infected teeth and gums, and to secure serviceable dentures. The diet varied somewhat in the individual case, but thorough mastication was suggested in every case; coarse vegetables and raw fruit were excluded from the diet, along with condiments, raw milk, underdone, tough, and smoked meats. Milk soups, crisp toast, butter, well cooked cereals, soft-boiled eggs, tender meat especially boiled and minced, chicken, whitefish and pickerel, purees of vegetables could usually be taken,

and fruit juices or cooked fruits without skins and seeds; baked potatoes, cauliflower, squash, and vegetable marrow could generally be added soon. In some cases from the country, the water used seemed to be a factor, and weak tea was substituted. Chilling of the abdomen was especially guarded against.

Medicinally, dilute hydrochloric acid in doses of fifteen to thirty drops before or with meals, diluted by the patient with sufficient water to make it palatable was used, and in many cases, found to be almost specific. The value of hydrochloric acid in these cases is not sufficiently recognised by the profession, though Leo and many others in Germany and quite recently VanderHoof in the United States, have urged its use. Many of the patients have taken the acid for years, sometimes almost continuously, sometimes only at intervals when a recurrence of diarrhoea threatened. It was found advisable to order the straight dilute hydrochloric acid along with a dropper; the four or six ounce bottle of acid would last a considerable time, and the patient was instructed to renew it steadily, without the necessity of another consultation, except at long intervals. Further, when the patient understood that he was merely using a little acid to replace a fraction of what was lacking, and that it might be used with advantage over months or years, he was often prepared to use the drug continuously, where a more complex prescription would have been given up. So too, the acid was usually ordered immediately before or with meals, as more convenient for the patient. In a few cases, sixty drops were given with meals, or half an hour or an hour after meals, and were found efficacious, where the smaller dose was ineffectual. There is no doubt of the extraordinary value of this simple treatment in many cases which have resisted all forms of astringent remedies, including opium. Pancreatin used in some of the earlier cases, was given up in favour of hydrochloric acid. In the beginning of treatment, bismuth salicylate gr. 10, three or four times a day was frequently used and the patient was advised to use it later if necessary, for a short time, in case of a relapse. In the most severe cases, an enema of two ounces of thin starch solution with ten or fifteen drops of laudanum was used occasionally at the beginning of treatment, combined with rest in bed.

It has been objected with perfect truth, that thirty or sixty drops of dilute hydrochloric acid given with each meal represents but a negligible

quantity, compared to the huge amount poured out by a healthy stomach in response even to a small meal; the success of these tiny doses however, will in many cases brush aside any theoretical objections to their use.

It must be noted that thirty-one of sixty cases of anacidity were not attended by diarrhoea; four of these had quite indefinite symptoms, while two (men of sixty-four and fifty-four) complained of spells of severe bloating and distention coming on from 4 to 5 p.m., and lasting till bedtime, with eructation of gas and even vomiting; in both cases there had been marked loss of weight (forty and twenty pounds) so that malignancy was suspected; gastro-intestinal x-ray examinations were negative; the test meals gave a small quantity of coarse food particles, with blue litmus paper unchanged. Both cases responded in an extraordinary way to dilute hydrochloric acid, and were well when seen one and two years afterwards.

II. The remaining twenty-five cases of gastric anacidity were suffering from pernicious anaemia. Of these fourteen were females and eleven males; no Jews were seen with the complaint, and enquiry of several busy practitioners, including Dr. Bercovitch, and some slight study of the Winnipeg General Hospital records, made by Dr. Goodwin has failed to bring a single case of pernicious anaemia among the Jews to light. This seems to me a very remarkable fact, worthy of some consideration and investigation, in view of the great prevalence of pernicious anaemia in Winnipeg and the prairie provinces generally. The exemption of the Jewish race from this disease can hardly, however, be general, for no note is made on the subject in the monumental *System of Medicine* edited by Kraus and Brugsch, or in the recently published *Oxford or Nelson Systems*, while Cabot expressly states that race does not affect the liability to pernicious anaemia. Recently Levine and Ladd have pointed out that pernicious anaemia is less common in immigrants from Russia, Italy, and Eastern Europe.

It should be noted that all observers are agreed that gastric anacidity is present in practically every case of pernicious anaemia from its earliest recognition and through its entire course till death. In doubtful cases, one may with advantage utilise the presence of free hydrochloric acid in the stomach contents to exclude the possibility of pernicious anaemia. In the twenty-five cases of anacidity with pernicious anaemia, nine presented no unusual symptoms save that in one,

free hydrochloric acid was found to be absent in the gastric contents two years before any blood changes were found, and that another, a woman of middle age, whose red cell count was 2,250,000, haemoglobin 55% with marked variation in the size and shape of the red cells, gave a history of having been diagnosed pernicious anaemia ten or eleven years previously by a prominent Montreal physician, and of suffering for all these years from the disease. Eight of the number presented marked mouth symptoms, while the remaining eight complained bitterly of sensory or motor symptoms in the extremities.

A little closer study is offered of these two groups with tongue and spinal cord symptoms, because these troubles may appear early and in fact may dominate the clinical picture before any characteristic blood changes appear.

(a) The tongue disorders have been emphasised for many years by William Hunter, of London, who now would confine pernicious anaemia, or "glossitic" anaemia as he calls it, to cases of anaemia with the tongue symptoms. Hunter holds that glossitic anaemia is usually complicated and greatly aggravated by septic anaemia from infected teeth and gums; other severe anaemias without mouth symptoms are regarded by him as septic anaemias, apparently regardless of the exact blood picture. In so narrowing the definition of pernicious anaemia, Hunter stands alone, especially when he claims that his narrowed group of glossitic anaemia is dependent on excessive blood destruction, while the remaining anaemias owe their character to deficient blood formation.

Minot in the *Oxford System* estimates that fully 45% of pernicious anaemia cases have disagreeable sensations referable to the mouth, while Brugsch, in Kraus and Brugsch's *System* says the "Hunter" tongue is very important but seldom found.

Of the eight cases with mouth symptoms, seven were females and five occurred between the ages of fifty and sixty. The complaints were soreness, burning and scalding at the tip and sides of the anterior half of the tongue, lasting sometimes a few days, sometimes a few weeks, and recurring irregularly possibly for two or three years. The seasonal time of onset and recurrence (July to September) noted by William Hunter was unfortunately not specially investigated. In the attacks, the tip and edges of the tongue looked raw and deep red in patches, as if the epithelium had been freshly stripped off; small vesicles often appeared in the attack, especially on the under

edge of the tongue. The mucous membrane of the lower lip was sometimes affected; in one case, the dorsum of the tongue suffered also, while in another, the burning extended to the throat, and in a third, from the tongue and throat downwards to behind the end of the sternum.

In the intervals, the tongue was noted in two cases to have an atrophic, smoothed out appearance, but this sequela was certainly not present in all cases, even with a long standing history. In three cases, burning of the tongue preceded any definite symptoms of anaemia by one to two years; the symptoms could be produced in two cases by eating tomatoes, and in another, by candies or raw fruit, while another patient, who had suffered severely for two years, was very greatly improved though not cured, a year prior to my examination, by having many infected teeth removed.

As a general rule, the tongue symptoms lessened in severity as the anaemia progressed, possibly due, as above, to the removal of accompanying septic foci in the mouth. I have noted no scarring or white atrophic patches as the result of the glossitis, which is apparently too superficial to cause the changes. There is, I think, another chronic tongue condition of which I have seen three or four examples, associated with scarring and white atrophic patches mainly along the sides of the tongue; the condition is painful and recurs for years; its origin I do not know but it is distinct from the ordinary secondary or tertiary manifestations of syphilis, and the Wassermann in two cases was negative.

While every case of frequently recurring soreness and burning of the tip and edges of the tongue must be viewed with anxiety and carefully watched from the pernicious anaemia standpoint, I must record the case of a married woman of fifty-seven whom I first saw in 1914, complaining for six months of soreness of the tip and sides of the tongue, with burning more or less all the time; in April 1922, she again appeared, the tongue symptoms having continued off and on during the eight years; no objective changes were present in the mouth; the red blood count was 4,960,000, haemoglobin 70%, with 6,400 whites, while a test breakfast gave free hydrochloric acid within normal limits. A similar case, with marked tongue symptoms for six years with moderate secondary anaemia and free hydrochloric acid in the gastric contents, is now under my care.

(b) Turning now to the eight cases with marked



spinal cord symptoms, occurring comparatively early in the disease; five were males, while six of the eight occurred in persons over sixty. The greater tendency for the appearance of spinal cord symptoms in people beyond middle age has been emphasised by all observers; the condition is very prevalent in the West, and is apparently much more frequently met with than ten or fifteen years ago. I have seen both in consultation and in hospital practice a very considerable number, not included in these office cases.

The patients complained of numbness and "pins and needles", sometimes also of coldness in the extremities, beginning usually in the feet and hands and extending upwards in the course of weeks or months so that the lower trunk becomes involved. In two cases, however, the numbness started on the front of the thighs and only in the course of months reached the feet; though usually bilateral, the condition is often more marked on one side. The numbness and tingling is most trying to the patients, sometimes disturbing their sleep. Clumsiness, *e.g.*, in needlework or in handling cards is early complained of; weakness too appears, so that the patient tires readily in walking. In two instances, weakness of the legs was first noticed in going upstairs, combined with slight unsteadiness, which in one case amounted to a definite ataxia. At first, these subjective sensations are not accompanied by definite objective sensory changes; soon touch does not "feel natural"; changes in the appreciation of pain and temperature are as a rule earlier demonstrable than changes in tactile sense; the sense of position of the toes may be affected early. The knee jerks are usually exaggerated, though in the case with definite ataxia, they were lost when first seen only three months after the onset of symptoms. The sole response may be flexor and may remain so for months, ultimately becoming extensor, often on one side only at first. A girdle sensation was present in two cases, and extensive vitiligo was present twice. The cord symptoms may antedate all obvious blood changes by months, even by a year or more. Thus one patient suffered for almost two years from tingling and numbness in the hands with slight weakness before he went South, where the appendix was removed for vague digestive disturbances; a note from the South stated that "the red blood cells were 3,420,000, haemoglobin 80%, blood otherwise normal; slight evidence of some cord condition, not marked enough to make a definite diagnosis." After

the operation the cord symptoms and anaemia developed rapidly, the patient dying in less than a year from the time of operation.

Another patient complained bitterly of numbness, tingling and weakness of the limbs for five to six months, before obvious changes occurred in the blood and even then, the red cells amounted to 3,900,000, haemoglobin 70% and whites 9,200, with distinct anisocytosis; a year later, the typical blood picture was, however, present.

In still another patient, at a time when the ataxia and weakness had developed so far that the patient could not stand, the red cells were 3,190,000, with no marked change in the microscopic picture, haemoglobin 82% and whites 7,000; this patient died six months later, with a typical blood picture. It is thus obvious that the nervous symptoms depend not on the degree of anaemia present but on the presence of the unknown toxin, which causes at once the cord symptoms and the anaemia, sometimes concomitantly but sometimes independently of each other, though in general, the anaemia is present for some time before any nervous symptoms develop.

It is unfortunately true that these spinal cord symptoms improve little if at all, even with a marked remission of the disease otherwise, whether brought about spontaneously, medicinally or by transfusion. They depend on degenerative changes in the white matter of the spinal cord, at first and mainly in the posterior and lateral columns, usually of the dorsal region, though later involving practically the whole of the white matter, with some later degeneration of the peripheral nerves and changes in the cells of Clarke's Column. Orr and Rows have shown that a similar degeneration can be procured by the local action of bacterial products upon the spinal cord. In the diagnosis of postero-lateral sclerosis, the persistent and troublesome numbness and tingling of the extremities with later objective sensory loss help to distinguish the condition from disseminated sclerosis, while the appearance of an extensor response, in the ataxic type with absent knee jerks, would turn the diagnosis from locomotor ataxia.

It would exceed the scope of this paper to go far into the question of the blood change proper in pernicious anaemia. It may be pointed out, however, that while a jaundiced colour of the blood plasma, a reduced haemoglobin and red cell count, a high colour index, leucopenia with relative lymphocyte increase, diminished platelets



and especially the presence of many large deeply staining red blood cells with some large oval forms and occasional large nucleated reds represent the typical blood picture of pernicious anaemia, yet in the beginning and in the remissions, simple secondary anaemia or even normal blood findings may be present, save possibly for the occasional presence of unusually large, sometimes oval, red blood cells. This caution is the more necessary since twice I have seen patients, who in marked remissions were assured by physicians that the former diagnosis must be incorrect; an assurance leading naturally to the resumption by the patients of their old activities, with disastrous consequences.

After all, it must be remembered, pernicious anaemia is a disease of unknown origin, with symptoms and clinical course more or less charac-

teristic; the yellowish grape-fruit appearance of the skin, the increasing weakness in the absence of obvious explanation apart from the blood picture, the almost constant gastric anacidity, the frequent symptoms in the mouth and in the spinal cord, the increased excretion of urobilin, the downward course generally arrested by periods of remission of varying length, form a syndrome which even with an atypical blood picture demands the diagnosis of pernicious anaemia.

On the other hand, an absolutely typical blood picture of pernicious anaemia may be found in *Bothriocephalus Latus* infection, in lymphatic leukaemia, occasionally in the bony metastases of carcinoma and in pyridin poisoning.

Thus we see that in the diagnosis of pernicious anaemia, the clinician must be the final court of appeal, in the face of varying laboratory findings.

## ACRODYNIA (?) A REPORT OF THREE CASES IN RURAL PRACTICE\*

A. F. MCKENZIE, M.D.

Alliston

SEVERAL years ago I attended three children each having a similar group of symptoms, quite different from any that I have seen before or since. Until recently I was not aware of any description in text book or journal that would enable me to associate these cases with any observed by others. In July, of 1921, I noticed a short article in a medical journal<sup>1</sup> entitled "A Case of Acrodynia" and a glance through it reminded me of the three cases I had attended years ago. Our great English poet asks—"What's in a name?" We of the medical fraternity generally feel happier and are better able to satisfy the demands of the patient and his friends if we are able to attach a name to any case of sickness and thus arrive at what is ordinarily termed a diagnosis. Etymologically the term "acrodynia" means painful extremities. I cannot find the word in any of the recent text books in my library nor in the indices of any of the *Medical Annals* for the seventeen years extending from 1905 to 1921. In the recently issued 1922 volume however, there is a short article on

acrodynia. In the same volume there is another article under the heading "erythroedema". This appears to be an entirely new word and was apparently coined by Swift to designate a number of cases, observed in Australia, which appear to be similar in nature to the cases observed on this continent and described under the name of acrodynia. Acrodynia is not a new word. Dunglinson's Medical Dictionary published nearly fifty years ago, gives the following definition;—"A painful affection of the wrists and ankles, especially with an erythematous eruption which appeared in Paris in 1828-29. It appears to have been the same as *Dengue*."

In the dermatological volume of *Morrow's System of Genito-urinary Diseases, Syphilology and Dermatology* published in 1894, a whole page is given to acrodynia otherwise termed epidemic erythema and cheiropodalgia and it is there defined as an acute epidemic and general disease attended with disorders of the nervous system. It is especially characterized by pains in the extremities and an erythematous rash on the skin followed by thickening of the epidermis, desquamation and pigmentation. It has been observed

\*Read at the annual meeting of the Ontario Medical Association, May, 1922.

most frequently in the east but also occasionally in Europe. As will be pointed out later on there is some difficulty in identifying the cases recently reported as acrodynia with the description given in Morrow's System and the accounts we have of the Paris epidemic.

The following description of the cases observed by myself is prepared from notes taken at the time of my attendance.

*Case I.—Mary N., aged 5 years:* I was called to see her on February 14th, 1899. The child had always been considered by her parents to be somewhat nervous. About three months previously she had been troubled with frequent and scanty micturition. A dose of worm medicine was given by the parents which caused expulsion of some worms and the urinary trouble ceased. About a month previous to my seeing her she had an attack of what the mother thought was "Grippe", the other children in the family being affected in the same way. The principal symptom connected with this attack was vomiting. After getting over this she appeared to improve for a while. She then began to complain of abdominal pains and these continued for about two weeks before I was consulted; these abdominal pains, associated with constipation, some retraction of the abdominal muscles, loss of appetite and general irritability appeared to be the principal symptoms at my first visit. Shortly after this the abdominal pains became less, and she began to complain of coldness of the extremities followed by itching, or as the mother thought tingling pains, first in the lower and then in the upper extremities. The child was irritable and cried when she was touched. There appeared also to be real pains first in the muscles and then in the joints but no redness nor swelling of the latter could be noted. The child was very weak but had no actual paralysis. The urine was scanty and acid. No albumen. The patient took very little nourishment. *About two weeks* after my first visit a roseolous rash was noticed on the hands and feet which were slightly swollen and felt cold to the touch. The mother said that a couple of days previously the back was covered with a somewhat similar rash. Tongue coated. T 99° P. 130; abdomen still retracted; patellar tendon reflex appears to be absent but owing to the child's unwillingness to be examined it was difficult to be sure of this. *One month* after my first visit the symptoms appeared about the same excepting that a few days previously the left ear began to discharge after some days of earache.

Hands and feet were still swollen and itchy. Rash fainter, P. 120. Mother thinks she is not quite so irritable since the ear began to discharge. *Six weeks* after first visit. Patient takes very little nourishment and has got very thin. Passed one worm about a week ago and about the same time developed a cough. Hands and feet desquamating with quite large pieces in some spots, very much as after scarlet fever. There is a sore on the upper lip resembling a boil. Apart from the itching not much complaint is made of pains. Bowels inclined to be loose lately. *Seven weeks* after first visit. Patient is eating better and apparently gaining in weight. Tongue clean. Feet and hands do not appear to be so congested but pustules are present on some of the fingers and toes. Cough is much better. Pustule on lip is better. Ear suppurated again a few days ago but this appeared to be from the external auditory canal only. *Ten weeks* after first visit. Patient now sits up part of the day and rests well at night. Appetite good. Bowels regular. Toes and fingers nearly all healed. One finger still has a pustule. *Ten months* after my first visit the following note was entered in my case book and was written after I had been called to Case No. II and recognized the similarity of symptoms—"Patient gradually improved and got entirely well. The redness of the extremities while at the same time they felt cold to the touch was a symptom noticed by the mother early in the disease. A peculiar frowning expression with avoidance of light was another symptom."

*Case No. II.—Kate H., aged 4 years,* was first visited by me November 27th, 1899. Patient had been ailing for about two weeks with abdominal pains, restlessness and general nervous irritability. Her mother gave her worm medicine which caused the passage of some worms but symptoms did not improve. When I first saw her there was photophobia, the patient keeping the eyes almost constantly shut and away from the light. My attention was not specially called to the condition of the hands and feet at my first visit but there was a fine papular rash on the face and body. About a week after, however, the hands and feet were noticed to be rosy red in colour but cold to the touch. The urine was thick with urates. At my first visit some worm powders were left and two were given and one or two round worms were passed. *Seventeen days* after first visit, child was able to walk but with a peculiar stiff and waddling gait; has a peculiar frowning expression but is not so intolerant of

light as at my first visit. Vesicles were beginning to appear on the fingers and the child is constantly working with these. A fine rash was still present on the body; in some places the skin was broken owing to scratching. Two days later the father reported that blisters and sores were forming on the fingers and toes. The temperature of the body was 99°. *Three weeks* after the first visit, the patient was quieter during the day, but no better at night. Complained greatly of itching and a constant desire to micturate. Her appetite was better. The spots on the hands were no worse and the hands were not so cold or red. The child appeared also to be walking better. *Seven weeks* after my first visit, the child appeared better in most respects but was still very restless at night. She was now gaining in flesh. Her mother informed me that she had been in the habit of giving the patient a worm candy about once a week for the past year; she thought that the child's desire to micturate so frequently at night was merely an excuse on the part of the patient to relieve the itching by placing her feet on the cold floor. *Eleven weeks* after first visit the child was reported to be much better. For some nights she had not had to take anything to produce sleep. *Six months* after first visit I saw the patient in my office. She appeared to be fully recovered. The father informed me that the nails of all the fingers and toes came off.

*Case III.—Baby M., aged 7 months, female:* I was called to see this baby on March 18th, 1901. She had then been ill for about three weeks, very restless, tossing herself around and not sleeping for more than a few minutes at a time. The bowels were constipated. Erythematous spots appeared on various parts of the body. The hands and feet were of a rosy red colour but cold to the touch. The child had pneumonia when three months old and the mother thinks the extremities have been more or less like this since that time. The child has a peculiar frowning expression. *Two weeks* after first visit. Child about the same but mother thinks it rests a little better at night on account of the sedative given. *Three weeks* after my first visit there was not much improvement. Appetite was very poor and bowels were constipated; hands appear about the same; spots still come and go on the body, but not so much so as before. Pulse rapid.

This is the last note I have on this case but shortly after, the patient began to improve and made a good recovery but continued to be a

somewhat nervous child. This was a comparatively mild case and had it not been for the other two might easily have been forgotten by me.

I wish to report these cases for the following reasons:

(1) They appear to me to belong to a similar group of cases as those recently reported by different observers including Weston<sup>2</sup> and Byfield<sup>3</sup> in the United States, Brown<sup>4</sup> in Canada, Swift and Wood<sup>5</sup> in Australia.

(2) These cases were observed in country practice showing that whatever the cause of the trouble it is not confined to city children.

(3) They were observed over twenty years ago showing that the cause or causes of the trouble do not pertain exclusively to recent years.

The onset and progress of the disease may be defined as subacute rather than acute, and the average duration three months or longer. The principal symptoms noted in connection with my cases were as follows: (1) Abdominal pains with constipation. (2) General nervous irritability and insomnia due to or accompanied by disagreeable sensations of some sort in the extremities and described by the first two patients as itching. (3) Erythemas of various kinds. (4) Photophobia which according to my recollection was not due to nor accompanied by conjunctivitis such as we see in measles. (5) Loss of appetite, wasting and general weakness without actual paralysis. (6) Absence of tendon reflex noted in one case. (7) Frequency of micturition. (8) A peculiar stiff gait in walking. (9) Very slight fever while the cases were under my observation but fever may have been higher at outset. (10) Pulse inclined to be rapid. (11) Discharge from ear and bronchial trouble in one case. (12) The nails of fingers and toes fell off in one case.

Practically all of these symptoms in various combinations and degrees of severity have been noted by the other observers mentioned. Some symptoms observed by others but not noted by me are: (1) Profuse mucopurulent naso-pharyngeal discharge. (2) Profuse perspiration. (3) Falling out of teeth and hair. (4) Acetone in the urine. (5) Leucocytosis. The essential symptoms of the disease would appear to be: (1) Subacute onset and course. (2) General nervous irritability with paresthesia of the extremities. (3) Erythema.

What is the nature of these cases? Is it a specific disease or may a similar group of symptoms be caused by different agencies? Is this group of symptoms peculiar to young children or



have any cases been recently described as occurring in adults? Are we justified in appropriating the name acrodynia to designate these cases when that word was used a century ago as the name for an epidemic disease affecting large numbers most of whom were presumably adults. Moreover, conjunctivitis is spoken of as a prominent symptom in the originally described acrodynia. Although in these recently described cases in young children photophobia is mentioned as a symptom it does not appear, as a rule, to be associated with conjunctivitis. Can a similar group of symptoms be produced by chemical poisoning? In the year 1900, there was in England<sup>6</sup> a veritable epidemic of arsenical poisoning which was traced to the drinking of contaminated beer. Many of these cases presented symptoms very similar to the cases we are now considering but in some features, particularly as regards the conjunctivitis, more resembling acrodynia, as observed a century ago. Indeed it is difficult to resist the suspicion, that some of the epidemics mentioned by Weston<sup>2</sup> in his paper may have been due to wholesale arsenical poisoning. With regard to my own cases, particularly the first two, I thought at the time that possibly the toxæmia due to the presence of worms and the frequent administration of santonin for their expulsion may have been contributory factors in the etiology. Some have thought that these cases were varieties of pellagra. I shall not attempt to enumerate the various points of difference. The skin lesions of pellagra are said to have sharply defined borders. This was not so with the cases now under consideration. Finally what about influenza? My cases were observed ten years after the severe epidemic of 1889-90; but for a good many years after the epidemic we had occasional outbreaks and sporadic cases, and "grippe" was held responsible, in some cases no doubt correctly, but in others probably erroneously, for a good many things we could not otherwise explain. Most writers seem to think there is a close relation between cases of acrodynia and influenza.

*Diagnosis* in the early stage of these cases may be difficult. In my first case on account of the general nervous irritability, photophobia, constipation and retracted abdomen I was for a time apprehensive that I might be dealing with the premonitory symptoms of tuberculous meningitis. The diagnosis finally arrived at was some form of neuritis. The fully developed and well marked case is however so peculiar that I think

it will, as a rule, be recognized by a practitioner, who has seen or read of other cases. Isolated mild cases might be overlooked.

*Prognosis.* This is generally said to be good. The mortality however according to the statistics available at present appears to be about 7%, most of the deaths being due to a complicating broncho-pneumonia.

*Treatment.* As one writer puts it these are miserable cases to deal with and the knowledge and skill both medical and diplomatic of the practitioner will be severely tested not only in the attempt to alleviate the sufferings of the patient but to satisfy the relatives while nature is working out a cure. In the absence of exact knowledge as to etiology, the treatment must be largely symptomatic. The maintenance of nutrition and the administration of tonics and sedatives are probably the main things requiring attention. If there be reason to suspect the presence of intestinal parasites these should be got rid of as speedily and effectually as possible. In these days of filterable viruses and imponderable vitamins it is possible that we may treat too lightly the potency for evil of such vulgarly macroscopic agencies as common worms.

In my cases laxatives, small doses of arsenic and iron and cod liver oil were given. If I had another case I think I would try calcium lactate as a general tonic and nerve sedative. Chloretone given at bed time was thought by the parents to have been of some use in relieving the nocturnal restlessness. Atropine has been used for excessive perspiration. Removal of tonsils and adenoids and drainage of the accessory nasal sinuses has been done in some cases with apparent benefit. Inasmuch as broncho-pneumonia is only too apt to follow such operations when performed on fairly healthy individuals and as this is the complication most likely to cause death in acrodynia these operations should not be lightly undertaken. Such a happy combination as favourable surroundings, a wise pediatrician, a skilful operator and a thoroughly competent anaesthetist might justify a procedure that would be better let alone by the general practitioner.

*Conclusion:* A number of cases of sickness in young children have recently been reported in different parts of the world by various observers. The symptoms of these cases are sufficiently uniform and characteristic to justify grouping them together for purposes of comparison and study. Until more is known of the etiology and pathology "acrodynia" appears to be a con-



venient and appropriate term to apply to these cases which may or may not be of the same nature as the epidemic disease which under the same name occurred in Paris one hundred years ago and is said to have occurred frequently in eastern countries. It is quite likely that other Canadian general practitioners in both city and country have seen such cases but did not know what to call them. Until more is known of their nature

it would seem desirable that even individual cases should be reported, special attention being paid to any or all possible etiological factors.

## REFERENCES

- (1) EMERSON, *Jour. Am. Med. Assn.*, 1921, Vol. 77, p. 285. (2) WESTON, *Archives Pediatrics*, Sept. 1920. (3) BYFIELD, *Am. Jour. Dis. Child*, Nov. 1920. Illustrated. (4) BROWN ET AL, *Archives Pediatrics*, Oct. 1921. (5) *Medical Annual*, 1922, p. 149. (6) *Medical Annual*, 1902, and various numbers *Br. Med. Jour.* 1900.

**Desperate Risk Goitre.**—This report is based on 1,000 cases selected from a series of 1,318 records of recent cases, under observation since May 31st, 1914. In the opinion of Martin B. Tinker, Ithaca, N.Y., any case in which the patient is apparently faced with almost certain death unless relieved within a relatively short time might be classed as a desperate risk. Forty-two patients died without operation, either while under observation in the hospital or at their homes. The causes of death in these cases may be grouped as follows: hyperthyroidism with extreme toxæmia; hyperthyroidism in association with diabetes; goitre with extremely high blood pressure; goitre causing death by obstruction to breathing, and thyroid malignancy. In Tinker's experience with the hyperthyroid cases, those patients with obstinate gastro-intestinal symptoms, very high blood pressure and myocardial insufficiency have seemed especially desperate risks. When nausea and vomiting or diarrhoea have apparently resulted from thyroid toxæmia alone, uninfluenced by diet, medication or other causes, and have persisted in spite of treatment, the patients, without exception, have died. Hypertension in combination with hyperthyroidism has also proved of decided gravity. He has considered as not suitable for operation any patient whose blood pressure has not dropped at least thirty points, nor has he operated on any patient with a blood pressure of more than 190, and generally the pressure has dropped to 170, or lower. These patients are most safely operated on under local anaesthesia. Myocardial insufficiency, whether from poisoning of heart muscle or because of weakening from long continued tachycardia, also puts some patients in the desperate risk class. Among the hyperthyroid cases are many patients without

gastro-intestinal symptoms, extreme hypertension or pulse deficiency that directs attention to the gravity of their condition, but who, because of extreme toxæmias, are in desperate condition. In these cases the extreme unrest, tremor, insomnia, emaciation, dyspnoea, edema and very rapid heart—most, or all, of these symptoms—are sufficient indication of the gravity of the condition.—*Jour. Am. Med. Assoc.*, October 14th, 1922.

**Vitamins in Ice Cream.**—Vitamin A was present in the typical samples of ice cream examined by Arthur H. Smith, New Haven, Conn. in such concentration that he concludes that no noteworthy alteration in its potency is caused by pasteurizing or freezing. Normal growth was induced by 1 gm. of the ice cream, and ophthalmia was cured by 0.25 gm. containing 25 mg. of butter fat. The vitamin B of the ice cream can be accounted for by the equivalent quantity of milk used therein. Freezing had no effect on the vitamin B in the ice cream used. The ice cream, which was made from pasteurized products, contained no significant quantity of vitamin C.—*Jour. A.M.A.*, December 30th, 1922.

**Ocular Manifestations of the Rat Which Result from Deficiency of Vitamin A in the Diet.**—It is the impression of Arthur M. Yudkin, New Haven, Conn., that, from a clinical standpoint, the incipient changes in the eyes of rats showing nutritive disturbances on diets deficient in vitamin A are like the condition known as xerosis of the conjunctiva and cornea in man; and the more advanced picture is that of keratomalacia.—*Jour. Am. Med. Assoc.*, December 30th, 1922.

## Case Reports

ECHINOCOCCUS CYSTS OF THE LIVER  
IN A GIRL TEN YEARS OLD

H. MAITLAND YOUNG, M.D.

R. M.—(M.G.H. 395-22), a school girl ten years of age, was admitted to the surgical service of Dr. A. T. Bazin, on January 22nd, 1922, complaining of pain in the right hypochondrium, vomiting and fever.

*Previous History:* She came to Canada at the age of two years, from Southern Russia. An attack of four days duration, characterized by abdominal pain and vomiting occurred in November, 1921, and was the only attack of similar nature preceding this one.

*Present Illness:* The patient awakened at 5 a.m. on the date of admission complaining of pain in the right upper quadrant of her abdomen. She was nauseated and her bowels moved twice. Vomiting occurred on one occasion only, following a dose of paregoric. She felt chilly but there were no definite rigors. No urinary symptoms were present. The family history was irrelevant.

*Examination:* On admission her temperature was 101.6, pulse 136, respirations 30. Her complexion was sallow. She was able to turn on either side without distress but on deep inspiration she complained of pain in the right lower axilla. Physical examination of her heart and lungs showed no evidence of organic involvement. There was slight prominence of the right hypochondrium and epigastrium. Muscular resistance was present in these regions. A mass which closely resembled the liver extended four finger-breadths below the costal margin on the right side. Its lower margin was quite tender, and the area overlying the mass was flat on percussion. There was no evidence of free fluid and the costo-vertebral angle was free. Rectal examination revealed nothing abnormal. Urinalysis was normal and the leucocyte count was 14,000 per per cubic millimeter.

*Treatment:* The Fowler position with the patient under close observation was adopted until the following day when the leucocyte count rose to 19,000. A tentative diagnosis of acute cholecystitis was then made and an operation was undertaken. The caecum, appendix, stomach

and duodenum were all found normal. The liver was much enlarged and corresponded with the mass previously noted. The gall-bladder was distended, tense and oedematous but was easily emptied. A larger mass, the size of a grapefruit showed at the surface of the liver through a cleft in the liver substance three inches long and three-quarters of an inch wide in the right lobe. A smaller one lay in the quadrate lobe and was about the size of an orange. The portions of cyst wall presenting through the clefts in the liver were of a dull grayish white colour and nodular, like walrus hide. Each in turn was aspirated, a clear fluid containing flakes being obtained. The walls of the cysts were then incised and the endo-cysts dissected free and removed intact. The cavities were packed with gauze. Following the operation a differential blood count showed:—Polynuclears, 89%; lymphocytes, 8%; eosinophiles, 2%; transitionals, 1%. Pathological examination proved the cysts to be due to the echinococcus. All cultures taken at operation were sterile. On February 12th, an attack of acute follicular tonsilitis developed."

February 16th.: "When ready for discharge yesterday the patient's temperature rose to 104. She complained of abdominal pain, and tenderness about the wound. A small amount of serous discharge oozed from the upper angle of the wound. There was considerable induration around and beneath the wound."

Leucocyte count, 45,000.

February 20th.: Signs of fluid present at left base. 10 c.c. clear amber fluid withdrawn which was sterile on culture.

February 22nd.: "The lower end of the wound broke open and about 400 c.c. of a thin bile stained purulent fluid escaped. The culture showed streptococcus viridans."

March 26th.: "Following rupture, the wound discharged profusely for several days. The temperature gradually fell and for the past four days has been normal. The abdomen is soft throughout and the liver edge is just palpable. She was discharged on this date."

June, 1922: Following discharge from the hospital, the patient was confined to bed with abdominal pain, fever, and increased discharge from the wound for about four weeks. This

month, however, the patient is well. She is able to be up all day, eats well, sleeps well and has gained much in weight and colour. The wound has entirely healed and she has no abdominal discomfort.

**Discussion:** Apparently this echinococcus infection has been present since the child left Russia at the age of two years; but latent except for the abdominal attack in November, 1921. Careful questioning after the operation elicited the fact that the child had never been closely associated with a dog. The pathological diagnosis was made upon the microscopic findings of the laminated endo-cyst wall with hooklets and daughter cysts. In the absence of any infection of the cyst prior to operation it is difficult to explain the elevation of temperature and the leucocytosis. It is well known, however, that escape of cyst contents or absorption without rupture will result in fever, leucocytosis and other evidences of protein absorption such as urticaria. Following

upon the attack of tonsillitis there was prompt metastatic infection of the sterile fluid remaining in the incompletely collapsed ecto-cyst cavities. The differential diagnosis was made between appendicitis in a subhepatic position. This was ruled out because of the large size of the mass after only a few hours illness.

**Amoebic abscess**—The child had never resided in, or passed through the tropics, her birthplace being on the shores of the Black Sea, near Odessa, a climate very similar to that of Canada.

**Cholecystitis** was diagnosed because of the history of a previous acute abdominal attack lasting four days, the sudden onset with pain, fever, nausea and vomiting together with the finding of an enlargement of the liver and a dull tender mass continuous with its margin and moving with respiration. An echinococcus cyst was not considered. In the past four years there have been but four cases of echinococcus cyst of the liver admitted to this hospital.

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#### **Congenital Hypertrophic Pyloric Stenosis and its Treatment by Atropin.**

—Sidney V. Haas, New York, asserts that the problem in this condition is a medical one, and that atropin is practically a specific. Pyloric stenosis is only an advanced degree of pylorospasm. It is only a single manifestation of a general hypertonic state whose etiologic factor is an overaction of the vagus portion of the autonomic nervous system. There is usually a hyper-excitability of all motor functions. In the treatment, certain points should be observed: Errors in diet or hygiene must be corrected. In every advanced case, saline solution should be given subcutaneously at frequent intervals until enough fluid can be taken by mouth to supply body needs. Atropin, like digitalis, must be active, i.e., freshly prepared from the crystals. Once in solution, deterioration is rapid. In the milder cases, the drug may be given by mouth, in the bottle, or, if the patient is breast fed, in a teaspoonful of water before feeding. In the severe cases, the drug may be administered hypodermically until vomiting is controlled. The dose is variable, 1/1,000 grain (or even 1/2,000 grain, in rare instances) at each feeding to a maximum which either controls symptoms or produces the physiologic effect, i.e., flushing, etc. Beginning with 1/1,000 grain, the

amount is increased at each feeding until the result is obtained, when the dose becomes fixed. Treatment may need to be given only a few weeks, or may be required most of the first year. There are rare cases in which much smaller doses are required to begin with. Occasionally, constipation with severe rectal tenesmus results. The omission of a few doses of atropin relieves this.—*Jour. Am. Med. Assoc.*, October 14th, 1922.

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#### **Tears of the Tentorium and Falx during Labour.**

—R. Zimmermann (*Munch. med. Woch.*, 1922, 3) classifies tears of the tentorium and falx produced during labour according as they are infratentorial, supratentorial, or mixed. Two of thirteen cases coming to autopsy were of the first-named group, and the writer believes that the clinical picture corresponding to infratentorial tears is a characteristic one; death of the child ensues immediately after the first respiration, the placental circulation being still intact. Probably the haemorrhage from the tear is insufficient to affect the respiratory centre until reinforced by the circulatory changes following the first respiratory effort.

## Retrospect

### NITROUS OXIDE

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*Montreal*

So many reports have recently come to our attention of varying degrees of failures with this anaesthetic agent that it seems opportune to consider the reasons.

The history of this gas is one of periods of use and disuse and always the enthusiasm of its advocates has been as great as that of those who have denounced it. Chemically, it is very feebly reactive and it has been definitely proved that nitrous oxide has no action on any tissue other than that of the central nervous system. After continued inhalation in a pure state and with complete exclusion of oxygen death takes place from asphyxia which does not differ in any respect from that brought about by the shutting out of oxygen by any physical means. This has been shown microscopically for every tissue, evidence of which may be easily obtained by reference to works on advanced pharmacology. Its peculiar action on the central nervous system causing insensibility has not been explained. The margin of anaesthesia between asphyxia on one hand and wakefulness on the other is very narrow. Again, the quality of anaesthesia is very unsatisfactory where this gas is administered under ordinary pressure. Some of the dangers met with in the past have been due to impurities such as traces of chlorine, nitric oxide, hydrazines and hydroxylamines, all of which are very toxic.

All of these difficulties have been gradually overcome with the experience of the past years so that now asphyxia is avoided by combining nitrous oxide with oxygen and it is well established that even the faintest suspicion of cyanosis should not be seen during the course of nitrous oxide anaesthesia. One should bear in mind very strongly, that cyanosis is not a sign of anaesthesia but rather one of a poorly conducted narcosis; this with the exception of a very limited class of cases where saturation is temporarily done in accordance with the method of McKesson. The percentages of the two gases cannot be fixed; even

for the same individual and for the same administration they must be varied to suit the colour of the patient, so much so that it is sometimes found necessary to exhibit fifty or more per cent. oxygen to the extremely toxæmic type. This brings us to the question of the narrow margin of anaesthesia, which can be easily maintained for as long a period as may be desired for any operative procedure by the constant and momentary attention to details on the part of the anaesthetist in avoiding cyanosis and in increasing the pressure of the gases in order to insure the diffusion of enough nitrous oxide through the pulmonary alveoli into solution in the blood from which to exert its specific action on the central nervous system. Of the impurities occurring in the manufacture of nitrous oxide, it should be sufficient to point out that practically all concerns supplying this gas are now removing every vestige of these toxic by-products by thoroughly approved chemical methods.

In the technique of administering nitrous oxide a considerable amount of training and experience is necessary to ensure satisfactory results, and among the more important factors may be enumerated the following: A thorough knowledge of the apparatus to be used, and there are many satisfactory ones obtainable; an ample supply of nitrous oxide and oxygen; careful methods of induction of anaesthesia, such as the avoidance of sensations of suffocation; and a complete acquaintance with the signs of anaesthesia, which signs are very definite in the case of nitrous oxide. As may be seen, many other minor features of importance familiar to most of us come under one or other of these.

The use of nitrous oxide as an anaesthetic is steadily increasing and with many is the anaesthetic of choice in all kinds of major surgical procedures. Among obstetricians we see an ever increasing tendency to give preference to nitrous oxide for the relief of labour pains as an analgesic as well as an anaesthetic. With this growth in the frequency with which gas is used, its success will depend upon the employment of persons well trained in the technique of its administration and on their part upon an alertness to avoid cyanosis and to observe the many other minor but important factors.



## Editorial

### LOUIS PASTEUR

FRANCE never forgets her great men and it is a pleasure to hear that in other countries also the centenary of the birth of Pasteur is being celebrated. We live in a very busy present and are apt to respect the past too little, nor can we realize our present position and how we attained to it unless we look back. Progress in medicine and the allied sciences during the last century was extraordinarily rapid and a glance at the work of Pasteur serves to show the great changes made during the life-time of a single individual, for he was as closely identified with, and as responsible for them, as any man of his age. The lesson of the life can also be learnt.

Born on December 27th, 1822, at Dôle, halfway between Verdun and Besançon, the son of a tanner, Louis Pasteur was educated at the primary school at Salins. He was encouraged by one of his teachers to go to Paris to study for admission to the *École Normale Supérieure* where young professors were trained. He was admitted in 1843. The first important studies of Pasteur were in crystallography and concerned with the optically active solutions of tartaric and racemic acid. He showed that crystals of the salts are unsymmetrical and that right or left-handed crystals rotated the plane of polarization to the right or left.

Pasteur took his doctorate in sciences and became first a professor at Dijon and later professor of chemistry at Strassburg. He fell in love with and married the daughter of M. Laurent, the Rector of the Academy there. She was the ideal wife of a scientist whose greatest interest was her husband's work. She sometimes assisted him or acted as his secretary and protected him from needless interruptions. She shared his family joys and sorrows and felt with him and

encouraged him midst the difficulties of research.

In 1854, Pasteur was appointed professor of chemistry and Dean of the Faculty of Sciences at Lille. He turned his attention to problems of fermentation, for Lille was a district of distilleries and breweries. One of his most important discoveries was that moulds and yeasts were necessary in the processes of fermentation of beer, milk and vinegar, refuting Liebig's idea that these organisms were present by accident only. This discovery brought Pasteur face to face with the question of spontaneous generation. The results of his experiments convinced many scientists although Pouchet in France, and Bastian in England were opposed to him and held to the old belief in spontaneous generation. Here was an instance of a chemist entering the field of biology and many biologists resented it.

He then returned to Paris, as Director of the *École Normale*, where he remained for the rest of his life. In 1865 he investigated silkworm disease on behalf of the minister of agriculture and discovered that the cause was a living organism. By adopting his suggestions, this disease, which was ruining one of the great industries of France, was eradicated. This work of Pasteur's with minute organisms was truly comprehended by Joseph Lister and led to his work on the suppuration of wounds and their treatment with antiseptics. Lister, in the *Lancet* of 1867, wrote in no uncertain terms of the epoch-making researches of Pasteur and later in 1874 in a letter to Pasteur he expressed his gratitude.

Pasteur was closely associated with the great physiologist Claude Bernard and through no seeking of his own was elected to the Academy of Medicine in

1873. Partly by reason of his friendship with Claude Bernard, partly on account of the natural outcome of his work and partly, perhaps, owing to the loss of two children Pasteur turned to the problems of disease which afflict mankind. He discovered the cause of anthrax and the doubting Thomases were silenced when in 1881 at the farmyard of Poilly le Fort the vaccinated sheep showed no disease after inoculation with infected material while the unvaccinated flock succumbed. A like success was achieved with the disease known as chicken cholera; later on he developed still further his method of attenuation of organisms and preventive inoculation. His studies of yellow fever and swine plague made possible the more general acceptance of the germ theory.

His final and crowning achievement was the discovery of a successful method of inoculation to prevent hydrophobia, using at first greatly attenuated virus

and then less and less attenuated in the same case. The Pasteur Institute opened in Paris in 1888, and since then others set up all over the world have become fitting monuments to the work of this noble man. Visitors to Paris will admire and not soon forget the painting of the master inoculating his first patient—the little Alsatian Joseph Meister.

Pasteur died in Paris in 1895 at the age of seventy-three. His methods as an investigator, his discoveries, and the details of his saintly life are told as well as could be in Rene Vallery-Radot's *Vie de Pasteur*, Paris, 1900, translated into English by Mrs. Devonshire, (London, Constable, 1911). This book should be in the hands of every medical man and should be read and reread by every young scientist. Recently L. Descour's *Pasteur and his Work* has been put into English dress by A. F. and B. H. Wedd, London, T. Fisher Unwin, 1922.

#### A NEW FACTOR IN BACTERIOLYSIS—THE BACTERIOPHAGE

UNDOUBTEDLY one of the most interesting developments of recent years in bacteriology is that which has furnished a new point of view on the dissolution or lysis of bacteria through viruses of a hitherto unknown kind which may be and often are associated with or accompany these organisms under conditions which up till a few years ago were supposed to be favourable to their growth. These viruses, or, as they are technically known, lysins, have been found in the normal intestinal contents and they occur there in dysentery, typhoid and paratyphoid A and B and bubonic plague, especially in the convalescent stages of these affections.

These lysins are filter-passers, that is, they are to be found in the filtrates made by subjecting the intestinal contents or excreta to filtration through porous porcelain filters of the Berkefeld type, which holds back all micro-

scopically visible bacteria and other organisms. A drop of a filtrate so obtained for example, from the intestinal contents of a case of dysentery, added to a pure culture of *B. dysenteriae* in a liquid medium will, after five or six hours, cause all the organisms therein to dissolve and disappear. A trace of this dissolved culture then added to a second culture leads to a like result after the same period of incubation, a trace of this second culture so affected inoculated into a third culture acts similarly and so likewise with the *n*th culture. In fact after a thousand of such results in succession the dissolution of the bacteria may be completed at an earlier stage of incubation than was found possible in the first or any earlier inoculations and this indicates that the factor responsible for the dissolution of the bacteria has become more active than it was in the first or any earlier culture of the series. This suggests that the factor

is a bacterial form but in a filtrate made through porous porcelain from any one of the cultures in the series there is no visible microscopic form and yet a trace of it is as effective in dissolving the bacteria as is a trace of the dissolved culture from which the filtrate is made. Further if the action is due to a specific chemical substance introduced in the first inoculation it would in the  $n$ th inoculation be so reduced in amount therein as to be wholly negligible as a factor in explaining the dissolving power it possesses. It is, therefore, not a visible microscopic organism and it cannot be, apparently, a non-living chemical substance, such as a bactericide is.

This lysis was at first known as the d'Herelle "phenomenon" because Dr. F. d'Herelle, of the Pasteur Institute, Paris—who by the way is of French-Canadian origin—was the first to emphasize its importance and significance as he did in 1917 by his interpretation of its causation. Results practically similar to those of d'Herelle were, however, obtained by Dr. F. W. Twort of the Brown Institution, London, in 1914 and 1915 with the micrococci in vaccine lymph, but in his published contribution describing these he offered no explanation of them and consequently the attention they deserved was not given them until 1920, when the extraordinary interest aroused amongst bacteriologists and immunologists by d'Herelle's results brought to general notice those of Twort and the "phenomenon" is now known as the Twort-d'Herelle "phenomenon".

What is the nature of the factor that is concerned in the dissolution or lysis of these bacteria? As already indicated, it is not a visible microscopic organism and, further, it is, apparently, not a non-living chemical complex, for at the thousandth inoculation it is so diluted as to be ineffective bactericidally unless we accept the impossible homeopathic principle that a chemical compound is the more active or potent on living matter the more dilute its solution is. d'Herelle holds that the factor is an ultramicroscopic organism which he has named *Bacteriophagum intestinale*, an organism

below the minimal limit of microscopic visibility, which multiplies by division in the intestinal contents as it does in cultures of bacteria. The existence of ultramicroscopic organisms is now generally accepted, they are the causative factors in rabies, measles, common cold, foot and mouth disease, molluscum contagiosum, poliomyelitis, the mosaic disease of tobacco, and trench fever, and it is probable that they are primary factors in the causation of encephalitis lethargica and influenza.

In the extended discussion of these phenomena which took place in the section of microbiology of the British Medical Association at its meeting in Glasgow in July, 1922, in which discussion d'Herelle led, a considerable divergence of view was presented by those who have worked in this field and it may be said that a commonly accepted explanation is still a desideratum. Twort maintained that though the possibility of the lysin in question being an ultramicroscopic organism has not been definitely disproved, on the whole it seems probable but by no means certain that the lytic material is produced by the microorganisms themselves and he suggests that it may be a product of normal bacteria formed for the purpose of causing lysis of "special forms" amongst them and thus liberating compounds antagonistic to other bacterial species or to neutralize the antitoxins of the infected host, an explanation that is more difficult to accept than that advanced by d'Herelle, for it postulates that in every pure culture there is an early differentiation of the bacteria into groups some of which are destined to be sacrificed for the benefit of the others, a remarkable negation of the struggle for existence in these low forms of life!

Dr. Gratia of the Pasteur Institute of Brussels, who participated in the discussion, holds that the lysin is not necessarily a living organism simply because it reproduces itself, for fire reproduces itself and further one can parallel the reproduction of the lysin by the production, under similar conditions, of the thromboplastic element in the blood plas-



ma. On adding, as he points out, a small quantity of distilled water to stable blood plasma, that of birds for example, a clot results from the setting free of the ferment, thrombin. When now a few drops of the serum from the clotted plasma is added to a second quantity of plasma it also clots, a few drops of the resulting serum added to a third quantity of plasma acts similarly, and so on indefinitely. In answer to this it suffices to say that thrombin, responsible for the coagulation, is not formed in the plasma but is liberated from a mother substance, thrombogen, by a ferment or kinase derived apparently from a constituent of the third corpuscle of the blood through a slight disturbance of the physical and chemical equilibrium of the plasma, caused by the addition of a trace of serum. The parallel, therefore, between the formation of the thromboplastic substances and that of the bacteriophagic substance is quite incomplete. As to the parallel with fire, it may be pointed out that when Pasteur advanced his theory of the causation of fermentation, one of his critics, if we remember rightly, maintained that fermentation started autogenetically and progressed autogenetically like fire. An old argument now with a new application!

Though the views as to the nature of the bacteriophagic element advanced in the discussion were discordant and d'Herelle's received little support, it must be said that on a careful critical reading of the report of the discussion as well as of the original contributions resulting from research on this subject, one is forced to admit that there are more factors in

favour of his view than there are in favour of any of the others. It is simpler, less involved, and it does not demand for its acceptance more than what one can reasonably admit. It is much less difficult to believe that the bacteriophagic lysin is an ultramicroscopic organism than it is to suppose that in a pure culture of a bacillar form certain strains of the bacilli are "sacrificed" for the good of the rest, and, moreover, to postulate that a non-living lysin, even though it may be of a highly complex organic nature, can reproduce itself, is to take a long step towards the acceptance of the now wholly discarded doctrine of the spontaneous generation of life. One must, however, before definitely accepting d'Herelle's explanation of the nature of the lysin, await further facts which are likely to be forthcoming soon because the interest which has developed in the subject is certain to attract a great many keen workers into this field of research.

Whatever the final decision may be on this score, it must be recognized that a new aspect is given to bacteriolysis and that some of the doctrines of immunology, now generally accepted, may have to be recast and new explanations of the resistance to disease will then be in order. It is not at all improbable that new lines of treatment may result, especially in bacterial infections of the intestinal tract, the great portal of disease in the body. The Twort-d'Herelle "phenomenon" and the correct explanation of it are, therefore, of transcendent importance in medical science.

A. B. MACALLUM.

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### DANGEROUS DRUGS

FROM one who has made a close study of this subject we are told that in Canada and the United States the illicit use of opium, morphine, cocaine and heroin, is becoming an international calamity. Rarely a day passes but one

reads in our press of an increasing number of addicts and peddlars who come before our magistrates for offences against the Opium and Drugs Act. For the twelve months ending March 31st, 1922, the Federal Government alone prosecuted



twenty-three doctors, eleven druggists, four veterinary surgeons, 165 illicit dealers and 634 Chinamen, making a total of 835 convictions. These figures do not include provincial and municipal convictions. The municipal convictions for Vancouver in 1921 were 858, and in Montreal for the eleven months of 1922, 646. The estimated number of drug addicts in Canada and the United States is 2,000,000.

The drug addict is not content with destroying himself, but has a fiendish desire to promote this addiction among his friends and associates. This, coupled with the enormous profits (from 100%-1,000%) of the peddler whose business in turn is also to produce addicts, causes those charged with the stamping out of this menace, grave concern.

The Federal Government through its department of health, is able to control the importation of these drugs for legitimate purposes, and its efforts in this direction have been noteworthy. Equally noteworthy, have been its efforts in prosecuting those engaged in smuggling drugs into Canada. It now rests with our provincial governments to study this problem from several angles. They must provide laws and penalties to bridge the gap between our Federal and Provincial jurisdiction. Provision must be made whereby those convicted as addicts may be treated not so much as prisoners, but as people diseased, in the almost forlorn hope that some may be permanently cured, and with the knowledge that in confining the addict they are to some extent preventing the making of others, and certainly suppressing crime, for 85% of narcotic prisoners have criminal records.

Unfortunately drug addicts are not all made by curiosity. Ours is a noble profession, so noble that those of our number who offend in this matter of illicit sale of drugs should be summarily dealt with. The government of the province

of Quebec expect to pass at this session legislation that will permit it to cancel the license of any physician or druggist convicted of infractions of the Opium and Drugs Act.

The experience of the clinic recently established and now discontinued in New York City, has conclusively proven that the so called ambulatory or slow reduction method of cure was practically useless. Three thousand addicts registered at this clinic and none were cured. It became a rendezvous for peddlars who found a ready market for their illicit wares when the so called minimum dose was arrived at.

It has on the other hand been demonstrated that the sudden withdrawal method will cure these unfortunates, but until those in control of the Drug Rings, the dealers and peddlars, have been put safely away, a large percentage of those afflicted will surely drift back only to sink lower each time.

At the third assembly of the League of Nations held at Geneva in September 1922, its commission brought in a report on the traffic in opium and dangerous drugs. Many countries have not yet ratified the opium convention of 1912. The commission observes "that as long as the dangerous drugs are produced in quantities exceeding the legitimate requirements, a great danger exists that the surplus will find its way into illegitimate channels. A control of production so as to limit it to the amount required for medical and legitimate purposes will therefore be the most effective way of putting a stop to the illicit traffic." When one considers the amounts that are smuggled into Canada annually, and the almost superhuman methods resorted to by these smugglers, one cannot but feel that a production control is the only hope of abating this new curse that has fallen on the new world so heavily.

A. K. HATWOOD.

## GOITRE

THE symposium on goitre at the Winnipeg meeting and the discussion which it evoked showed a divergence of opinion on the classification, incidence, diagnosis, prevention, and treatment of the non-inflammatory affections of the thyroid gland. On certain aspects of this subject one stands upon the firm ground of proved and demonstrable fact. On other aspects difference of opinion is justifiable because of varying results; while on yet other aspects mature opinion must await the further progress of laboratory experimentation and clinical research.

It would be a distinct advance and a comforting aid to the general practitioner, if the profession would adhere to a uniform nomenclature in classification. We would suggest the following:

(1) Adolescent or endemic goitre:—generally conceded to be a physiological attempt on the part of the thyroid gland to increase its thyroxin output, which, however, in the absence of sufficient iodine, results in colloid storage and tumefaction.

(2) Hyperplastic goitre (exophthalmic).

(3) Adenoma, toxic: the status of which is a pure hyperthyroidism: an intrinsic affection of the thyroid gland, in which extirpation invariably results in a cure, providing secondary changes have not taken place in the heart muscle.

(4) Adenoma, simple: which includes the adenomata which are not associated with hyperthyroidism and the various types of cystic and calcareous degeneration. It is estimated that in this group from twenty to twenty-five per cent. develop symptoms of hyperthyroidism at some time in their history. It is in this group, too, that haemorrhages most often occur; and, finally, it is in this group that the majority of malignant adenomata have their origin.

(5) Adenoma, malignant.

This classification does not take into account the rarer forms, namely, (a) adenoma associated with areas of hyperplasia, and (b) the diffuse adenomatosis of Goetsch.

To illustrate the advantages of the adoption of such a classification, we would call attention to the frequent application of the term "toxic goitre" to toxic adenoma, whereas the premier type of toxic goitre is undoubtedly the hyperplastic. Again, one meets with the term "hyperplastic adenoma", which is doubly confounding, because in the first place "hyperplastic" is the term accepted pathologically as the equivalent of the term "exophthalmic", and in the second place the histological feature of hyperplasia is absent in adenoma of the toxic type. So much for classification.

Our knowledge of the regional incidence of adolescent goitre is being placed upon a surer basis by the work of Kimball<sup>1</sup> and others. We may also give rational advice upon the prevention of adolescent goitre. But we are not yet in a position to state definitely the percentage of goitres which recede under the administration of the iodides or the percentage which, if left untreated, would ultimately go on to cystic or adenomatous changes. The number of adolescent goitres that eventually become hyperplastic must be very small, if, indeed, such a change ever takes place.

The differentiation of hyperplastic goitre from toxic adenoma should always be possible from the history and physical signs: a differentiation which bears directly upon prognosis and treatment. The ultimate prognosis in both types really depends chiefly upon the duration and intensity of the toxæmia. While the generalization, that hyperplastic cases are chiefly characterized by nervous phenomena and toxic adenomata by cardio-vascular changes, is frequently applicable, it may not be at all applicable in given cases. Again, while the greatest myocardial destruction is undoubtedly met with in toxic adenoma, we feel that clinical experience does not warrant the

assertion, that patients suffering from this condition seek advice primarily because of failing compensation. Electrocardiographic observations show that a majority of these cases do not present evidence of myocardial change. The frequency with which myocardial changes are met with in toxic adenoma may be attributed in part to the rather advanced age of incidence, namely, forty-seven years.

With regard to treatment, the consensus of opinion undoubtedly is that early and thorough surgical intervention yields the best results in both types of toxic cases, and, while the use of radium or x-rays certainly adds to the difficulty of a later operation, we are not justified in saying that they have no effect upon the one class of case to which such treatment is applicable, namely, hyperplastic goitre. It must be borne in mind that a severe or even fatal reaction may be evoked by the ligation of a single pole under local anaesthesia even more readily than by x-rays or radium. As Means<sup>2</sup> has shown, the effect of x-rays may be so substan-

tial that not only are cases of hyperplastic goitre restored to health, but over-irradiation may lead to the development of myxoedema. A further well-established fact is that, while preliminary ligation will, by temporarily reducing the basal metabolic rate, render hitherto inoperable cases safe subjects for radical procedure, the effects of ligation are not lasting or curative. The present trend in practice, if repeated observations show a steady decline in the basal rate with coincident improvement in general nutrition, is to postpone operative interference until such time as complete thyroidectomy or right lobectomy with ligation of the left upper pole can be safely undertaken. In the last analysis, each case of hyperplastic goitre should be made a separate study, and surgical judgment should be concentrated upon the questions of time of operation and extent of procedure.

E. M. EBERTS

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### ON GAS INFLATION IN X-RAY DIAGNOSIS

AT the last meeting of the British Medical Association, an interesting discussion took place on the value of gas inflation in x-ray diagnosis. The opening paper was read by Dr. Herniman-Johnson who said that the idea of obtaining contrasts in skiagraphs by the injection of air is almost as old as radiography itself, for shortly after its introduction deliberate attempts were made to throw light upon abdominal problems by the artificial inflation of the stomach, colon, and bladder. The normal stomach as described in x-ray text books of the present day, was figured by Williams in 1899, and to him rather than to later German workers should go the credit of originating the opaque meal idea. The idea, however, of inflating the peritoneum for diagnostic purposes ap-

pears to have originated in Germany within the past ten years. It can scarcely be denied that it represents a definite advance in diagnostic technique with which the introduction of the opaque meal method is alone comparable in importance. Unfortunately, while the opaque meal and enema are almost entirely free from risk, peritoneal inflation is not free, and in a recent review of the subject Case has collected records of four deaths. Of these one was due to the introduction of oxygen into the spleen; one to a subsequent peritonitis; and in the other two the patients became suddenly cyanotic and collapsed a few seconds after the introduction of the needle before any appreciable amount of gas had entered the peritoneum. Choyce states that in a few individuals the diaphragm is not

an absolute unperforate membrane and may permit some communication between the abdominal and thoracic cavities. Under such circumstances a condition of pneumo-thorax may gradually take place with serious embarrassment of the heart's action. Should any untoward symptoms develop, this possibility should be remembered, and could promptly be demonstrated fluoroscopically. Such an explanation of the two sudden deaths reported, however, appears improbable as cyanosis was said to have occurred almost immediately. It is possible that in a few individuals some slight trauma to a sensitive peritoneum is sufficient to produce reflex impulses inhibiting cardiac action. Apart from this rare condition safety in inflation of the peritoneum may be secured by careful technique. The use of a fine needle is most desirable. A suitable place for the puncture is through the belly of one of the recti muscles, about two inches below the level of the umbilicus. With caution one soon learns to feel when the needle passes through the posterior sheath. Perforation of a large vein should be avoided and if blood oozes out of the open end of the needle it should be withdrawn and should be re-inserted lest one inject gas into a vein. The gas should be introduced slowly from a suitable apparatus. Should the end of the needle have failed to completely

penetrate the parietes, and be still in the muscle, pain will be produced at once; if the needle is through the abdominal wall, it must be in the peritoneal cavity, or in some solid organ, which is enlarged and mal-placed; or in the substance of an abnormal growth; or in the lumen of the bowel. In the latter event, some of the gas will be passed per anum.

The amount to be introduced varies according to the special conditions, but as a rule about three litres is sufficient in an adult of average size. If the inflation gives rise to any pain or distress, the inflation should be checked and no attempt should be made to reach any special limit. To prevent the introduction of any infection into the peritoneum, absolute asepsis must be employed; and the possibility of doing damage by the mechanical effects of intra-peritoneal distension must always be borne in mind. Protective adhesions may be broken down and virulent septic organisms be let loose. The immediate after care of the patient is also of great importance. It is essential that the patient remain in the horizontal position for several hours, preferably for a complete day. This means that the examination should be carried out upon a stretcher fitting the top of the x-ray table, so as to permit the patient being carried back to bed with the least possible disturbance of position.

**Significance of Chronic Jaundice.**—S. Laache has made a study of chronic non-haemolytic jaundice in sixteen men and fifteen women between the ages of nineteen and seventy-six. Most of them were middle-aged or elderly; nineteen came to necropsy and three others to biopsy (operation). In as many as fourteen of these twenty-two cases cancer was diagnosed. The importance of gall stones as a cause of chronic jaundice proved to be comparatively slight, and they were found only in seven cases, in three of which they were associated with malignant disease. As in these three cases the gall stones

may have developed as the result of the cancer the importance of cancer as compared with gall stones in the genesis of chronic jaundice is seen to be very great. Cirrhosis of the liver was found in two cases, the disease probably being syphilitic in one of these cases. A remarkable feature of the other case of cirrhosis was the definite improvement that followed the exploratory laparotomy at which the diagnosis was made; this improvement was, however, not maintained. This material shows how essential it is to arrive at an exact diagnosis before treatment is attempted.—*Brit. Med. Jour.*, December 16th, 1922.



## Men and Books

### LABORATORIES: THEN AND NOW

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JUST one hundred years ago, on October 12th, 1822, according to Dr. Abbott's history of this school an advertisement appeared announcing a course of lectures in Natural Philosophy and Chemistry to be given at the Montreal General Hospital. These combined subjects representing the experimental sciences of the day have been surprisingly fertile and by a succession of cleavages have left a profusion of descendants. For full fifty years, however, their offspring lived at home, whereas now in later generations, no longer content to do so, they each and separately demand their own separate domicile. The first evidence of this modern tendency here at McGill was seen in 1874, when the students' cloak-room was fitted up to give a summer course in practical histology. Like the mustard-seed Maisonneuve planted long ago on your romantic soil, so this other seed has grown.

It is a simple story of industry, unselfishness and academic loyalty, a story which touches the present gathering in many and surprising ways. After his graduation Osler had gone abroad with the avowed intention of studying ophthalmology under Bowman; Bowman was a man primarily of the laboratory and so sent him to Burdon Sanderson, who in University College was then (1872) giving one of the first practical courses to students in a comparatively new subject, or, more accurately speaking, an old subject newly interpreted, namely physiology. There is neither time nor space to tell how in England, anatomy came to give house-room to this inconsiderate waif, which soon eloped from the home of its foster-parent in company with histology, the daughter of the house. What is more, the two ran away with the microscope, which at University College is only just now after half a century being reclaimed by its rightful owner, the Professor of Anatomy.

But at this time, Physiology and Histology were living contentedly together in Burdon Sanderson's laboratory, and there Osler made his early microscopical studies of the blood and received the general training which in some degree fitted him for the position proffered by this Faculty soon after his return. The young Professor of the Institutes of Medicine at McGill in the fall of 1874, inherited no laboratory; he was expected merely to share a lecture-platform, and was informed that his predecessor had a collection of diagrams which he probably would dispose of very reasonably. The Institutes of Medicine, as a chair, has disappeared, but fifty years ago, as some few of this audience will remember, it comprised nearly all that three of your chosen speakers of to-day now separately represent: Zoology, Botany and Physiology, and, what is more, Histology and Pathology as well. "A settee, not a chair." Principal Dawson, though primarily a geologist, incidentally taught Botany and Zoology, and, as may not be known, endeavoured to prevail upon Osler to take over these two subjects, the Dean adding that a three-months' course in pathology with the use of the microscope might well enough be added to the botanical course. Indeed, was not Linnaeus himself a physician?

It is a good example of how vague, ill-determined, and transitory are the boundary-lines between the curricular subdivisions of the medical sciences. The introduction of a new instrument like the kymograph, or a new procedure which requires special training and technique may make it necessary to draw the lines anew and create a specialty. Thus the aniline dyes and pathogenic bacteria revolutionized pathology, just as the X-ray is now revolutionizing clinical diagnosis. On the other hand, if the novelty is needed for the advancement of several subjects at once it may serve to obliterate time-honoured boundaries and cause fusion of specialties. So it was with the compound water-immersion microscope to which Osler the school-boy had been introduced as field-student of zoology and botany, and since he possessed at this time the only one in the school, and since pathological anatomy as well as normal histology were as much in need of this unfamiliar instrument as botany and zoology,

\*Abstract of an address delivered October 5th, 1922, at the opening of the New Biological Buildings, McGill University, Montreal. The full address will be published shortly by the University.

it was a natural suggestion that all these subjects should gravitate toward the Institutes of Medicine—toward the man with the microscope, both of them cumbersome instruments from our present-day standpoint, as the man often insisted.

Osler's first paper, indeed, was on a zoological subject, "The Canadian Diatomaciae," sent while a Toronto undergraduate to the Montreal Natural History Society; and another, "The Canadian Fresh-Water Polyzoa" followed a few years later. Meanwhile, as his student notebooks show, he was feverishly engaged in a study of entozoa and of animal parasites in general—indeed the literature of the nematodes contains a *Filaria Osleri*, and of helminthology a *Sphyraxura Osleri*. It was an interest that subsequently led him into comparative pathology, into his early public-health activities here in Montreal, and in later years with his pupils into eager studies of trichinosis, the amoeba of dysentery, and the malarial plasmodium. In these various ways he came in contact with botany and zoology, but it was not until he entered Burden Sanderson's laboratory that he touched the edge of that rising tide of modern physiology on whose very crest Professor Sherrington now rides.

Abraham Flexner tells of visiting a medical school during the progress of his investigations, and on expressing a desire to see the physiological laboratory, mentioned in the school's prospectus, he was told that if he would wait a moment it would be produced, and shortly afterward the janitor appeared with a sphygmograph in his hand. So in the first years of Osler's advent, the laboratory of the Institutes of Medicine in this school was a portable affair and consisted principally of the professor's microscope.

A clinical device has been perfected whereby at the same moment many students may listen through a single Medusa-like stethoscope, and we may also nowadays project the microscopic field on to a screen, but in the seventies a single microscope meant one eye at a time and, though a good beginning, this did not go far with many eyes eager to see. That more microscopes, in some way, had to be provided was providential in Osler's case, for had there been no necessity to raise money with which to procure an additional supply he might never have been drawn into the clinic, where he really belonged. An opportunity came to earn a few hundred dollars as voluntary attendant on the smallpox cases congregated in one of the wards of the Montreal

General Hospital. Though a hazardous job it was eagerly accepted, and in the end he used the small salary to import from Paris a dozen Hartnack microscopes for his class.\*

To supplement these microscopes he purchased ere long a single kymograph, together with a few other pieces of laboratory apparatus which, as he confessed in later years, he never could perform. This may have been because the professor was his own servant, for it is my experience that the most important and reliable piece of apparatus in any laboratory is a trained Diener of the old order, without whom many experiments and lecture demonstrations are doomed to failure. The race, alas, is vanishing, and before their complete disappearance it would be illuminating if some one of them, like Bartels of the Hallerianum, would put on paper something from the standpoint of the Diener about "laboratories and laboratory-workers I have known."

But for an Osler neither a servant nor elaborate equipment was essential. The candle of understanding can be lighted in more ways than one. For even though the apparatus may be perverse and the demonstration fail, principles, ideas, and inspiration may be conveyed through other mediums, and so with the aid of a laboratory manual which he wrote, the students were taught to see and record for themselves some of the simpler biological phenomena which their new microscopes could reveal. Those who recall the times, prejudiced witnesses though they be, insist that no better course has ever been given, and if the interest and enthusiasm a teacher arouses in his students is a gauge of a successful exercise, those given in the Institutes of Medicine in the seventies must have far exceeded the mere requirements of the Dean's office and the curriculum.

So for five years this course continued in makeshift quarters, partly in the chemical laboratory, partly in the students' cloak-room during the summer sessions, and when in 1880 one of the lecture-rooms in the then "new" medical building was finally converted into a physiological laboratory to keep pace with the growth of this particular course, the last word in laboratories has been said. It is true that similar things were going on in other medical schools, but here at McGill, at least, this was the beginning of the modern

\*These were the first practical student microscopes, water-immersion affairs, improved by E. Hartnack in 1855. The apochromatic objectives of Abbé were not introduced till 1886.

science-laboratory movement, whereby the anatomical dissecting-room, for generations the only place where observation was called for and the special senses were trained (until the bedside at least was reached) has come to be largely supplanted.

The ambition to have better surroundings is human, and the belief that through them better men will be secured, and that in them better and more productive work will be done, is a natural enough assumption though it has not always proved to be justified. It is the individual rather than his surroundings, the individual with that rare combination of qualities, the ability to convey knowledge and the gift of visualizing problems, coupled with that tenacity of purpose which pursues them to the end. Brains have more to do with this than bricks; imagination and ideals more than complicated apparatus installed in magnificent halls. All Roland the physicist asked of Mr. Gilman in the early days of the Johns Hopkins was a dwelling-house and a kitchen sink. Koch's fundamental discovery was made while a practitioner of medicine in a home-made laboratory, not in the *Königliche Institut für Infektionskrankheiten*. Pasteur in the garret of the old *École Normale* could be more productive than a host in later years at work in the institute named for him. Lister conducted his classical experiments in a cubicle off from his private consulting-room. Just a century ago Beaumont began his revolutionizing studies on digestion, sharing his successive domiciles with that incorrigible and fistulous Alexis St. Martin, a necessary participant of his researches. Claude Bernard worked in a cellar at the *Collège de France*. John Hunter carted his specimens up the back stairs of that rambling establishment in Leicester Square while Mrs. Hunter was giving soirées in the front drawing-room. Jenner was a country doctor. Harvey had no laboratory. Vesalius detached from the gallows the body of a criminal and smuggled it to his home to dissect. And to come back to our modern times, Osler made his reputation as a pathologist at the Montreal

General, and later in the old Blockley Hospital of Philadelphia, working in quarters a modern pathologist would scorn. And it is of course with the hope of giving the greater opportunity to a genius of the first order, or even to lesser geniuses, and indeed to give all a share—"a leaven of science"—through personal experience however slight, with what these others, the Hunters and the Harveys, the Beaumonts and the Bernards of our profession have really accomplished, that superb laboratories like these new ones of yours are regarded by the calculating business head of modern philanthropy as an investment, certain in the long run to bring dividends.

There is abundant reason for the practical wholesale teaching of the pre-medical sciences, so that all medical students may be trained in the laboratory method, for even though they may themselves never become laboratory workers they must at least learn by personal experience to evaluate the returns which now come from clinical laboratories, many of them private concerns run by technicians who have assumed the name of laboratorians, and whose reports to an unsophisticated profession, unfamiliar with the methods whereby they are obtained, are looked upon as more dependable for purposes of a diagnosis than any information to be gained by observation at the bedside.

Someone has said, "The knowledge which a man can use is the only real knowledge, the only knowledge which has life and growth in it and which converts itself into practical power. The rest hangs like dust about the brain and dries like raindrops off the stones." And with the growth of this modern laboratory movement we must beware lest the student be kept too much away from the bedside, which now some of them scarcely reach until after their graduation, when, too late for tutelage, they find themselves as practitioners suddenly plunged in the deep waters of professional responsibility, with scant clinical experience and only the straw of the clinical-laboratory tests to grasp at.

## THE LATE PROFESSOR JOHN JOSEPH MACKENZIE, B.A., M.B.

*Resolution passed at the meeting of the Senate of the University of Toronto held on*

*November 10th, 1922*

On motion of Professor Irving H. Cameron  
Seconded by Professor J. J. R. Macleod:

*By the Senate of the University of Toronto*

BE IT RESOLVED that in the lamentable death of Professor John Joseph Mackenzie, Professor of Pathology and Bacteriology, this Senate, in common with the whole University, has sustained a grievous loss.

The Committee appointed for the purpose, at the last meeting of the Senate, begs to submit the following citation of facts and its sentiments of appreciation thereupon.

On Emancipation Day (1st August) 1922 there went his Westward way and entered into rest a man greatly beloved, who shall also stand in his lot at the end of the days.

J. J. Mackenzie was born in the town of St. Thomas, C.W., on the 24th of March 1865, the elder son of Donald Kennedy Mackenzie and Mary MacAdam. His paternal grandfather was the Reverend John Mackenzie, an eminent divine of the Scottish Church, whose blood blended with other streams has had other representatives in Canada, notably in Knox College, Toronto, in the persons of the late Professor Halliday Douglas, and Professor H. A. A. Kennedy, now of New College, Edinburgh. There is a similar connexion also with the distinguished Rainy family of Glasgow and Edinburgh.

Having received his preliminary education in the Collegiate Institute of his native town, J. J. Mackenzie entered University College, Toronto, in 1882. Family associations brought him under the influence of Professor A. B. Macalium and thence under the spell of Professor R. Ramsay Wright, and so the Biological Course was his inevitable goal, and by this route he graduated with First Class Honours in 1886. The wider instruction in General Biology into which he thus entered gave him a larger view and a better perspective than fall to the lot of many pathologists and made him the broad-minded and clear-sighted man he was. With a view of laying still broader his foundation as a devotee of the Biological Sciences he went to Europe immediately after graduation and entered the Medical Department of the University of Leipzig, where he studied anatomy under Professors His and Braune; and physiology under Professor Ludwig, of whom he was a favourite pupil, and Dr. von Frey. He subsequently went to Berlin and studied physiological methods and research with Dr. Gad in Dubois Reymond's laboratory, and Bacteriology in Professor Koch's

Institute under Drs. Globig and Fraenkel. Moreover he did not fail to take advantage of the opportunity of association with the great Virchow, the founder of the Cellular Pathology. Having been appointed to a Fellowship in Biology in this University he returned to Toronto and continued in that post until 1890, when he was appointed Bacteriologist to the Provincial Board of Health. He served this post ten years, and in 1900 became Professor of Pathology and Bacteriology in his Alma Mater. This duty and his life-long devotion to Her, often at considerable personal loss and sacrifice, ceased only with his death. During Professor Ramsay Wright's absence in Europe in 1890-91, he was detailed to discharge part of his duty, and, in addition to lectures delivered in the Faculty of Arts, he dealt with Animal and Vegetable Parasites in the Faculty of Medicine. In 1893 he was appointed Professor of Bacteriology, Normal Histology and Comparative Anatomy in the Royal College of Dental Surgeons; and in 1896 Instructor, and in 1897 Lecturer, in Bacteriology in the Medical Faculty. In 1899 he took his medical degree in the University; and in the following session (1899-1900), owing to the illness of Professor John Caven he was called upon to complete the course of lectures in General Pathology to students of the Third Year. This probation was so satisfactory that when the post fell vacant in the following autumn he was appointed to the Chair. Perhaps it may be permissible to quote here a couple of unconnected sentences from the "Memorial Resolution" passed last month by the Academy of Medicine to convey an idea of the estimate in which Professor Mackenzie was held by the general medical profession: "As a member of the Academy Professor Mackenzie came into touch with the profession at large and brought his wide training and knowledge to (bear upon) matters of importance in the practice of medicine." "Not only has the Academy lost one of its most distinguished members, and the University one of its outstanding Scientists and teachers; but in the passing of Professor Mackenzie many of us have lost an inspiring friend, and scientific medicine a noble exponent. . . . . In looking over papers that he has read before this Society, his sympathy with the clinical application of scientific advance is continually in evidence. Through the Academy, too, he had an influence on the trend of medical affairs outside the circle of his immediate University duties, and the value of his wise opinion in matters of general medical progress is perhaps best



realized when it is no longer available." Since Professor Ramsay Wright, our first and only Vice-President, is no longer here to say a word on this occasion, as he would desire to do, it may be suitable to recall some words of his written in a prophetic strain in 1900. "Mackenzie possesses a very extensive knowledge of the literature of Modern Pathology, facilitated by his mastery of French and German, a weapon equally useful to the teacher and to the investigator, and he further possesses unflinching tact in his dealings with those with whom his duties bring him in contact, a quality likely to endear him both to his pupils and to his Colleagues." How completely this prophecy was fulfilled, nay amplified, throughout the generation which has succeeded its utterance, the comments and encomiums elicited by his death, from Colleagues, pupils and a host of friends and admirers amply testify.

His one great grief in his professorial life was that despite his qualifications and preparation for research and his indefatigable industry, his ambitions and abilities in that sphere were cribbed, cabined and confined by the more immediately pressing demands of his docent and tutorial duties and the dry as dust details of departmental administration. Despite this, however, he did make some contributions to the advancement of knowledge; and the record of them is to be found scattered through the various Journals of Pathology and the Transactions of the Royal Society of Canada and of the Royal Canadian Institute, and in the proceedings of the Royal Society (of London) concerning researches upon the Physiology and Pathology of the Kidney made in conjunction with his colleague, our late Professor of Physiology, T. G. Brodie, F.R.S. He made many contributions to the Academy of Medicine (Toronto), to the different Canadian Medical Journals, the American Public Health Association and periodicals and to the London Lancet. And your Committee begs leave to append hereto a list, compiled with considerable care and industry by those who are carrying on his work at the instigation of one of us, Professor J. J. R. Macleod, of his professional writings so far as accessible at the moment, comprising some sixty-eight titles. It may be of interest to remark here that "the 'Negri bodies' of rabies were seen and described by him before the published observations of Negri himself," but his much occupation at the Board of Health at the time prevented his working out their full significance. He was largely instrumental in the elaboration and introduction of the six year Medical course and in the recent Faculty Reorganization. Apart from local Associations, he was a Member of the British Association for the Advancement of Science, the American Association of Pathologists and Bacteriologists, the Society of Experimental Pathologists, the Society of Experimental Biology and Medicine and the American Public Health Association; also a Fellow of the Royal Society of Canada, from

1909 on, and he served for eight years as Secretary of "Section IV" therein. He served for many years as Pathologist to the Toronto General Hospital.

In 1915 he went "Overseas" with No. 4, Base Hospital, (the University of Toronto unit) and worked with it as Pathologist at Salonica and in England; and he wrote a paper on the Basingstoke Hospital, hitherto unpublished, in which he was latterly stationed. On the Civil Hospital side he contributed a paper upon "Hospital Organisation" before the Mt. Sinai Hospital, N.Y. so late as 27th February, 1919. His opportunities at Salonica for the special study of Dysentery were improved to the extent of evolving a therapy for that very fatal disease, the scourge of armies, from which No. 4 Base Hospital gained great kudos. While in Salonica he developed an affection of the heart supposed to have been of infective origin, and, although he made a temporary recovery, it is quite possible that this was the beginning of his ultimately fatal malady, Streptococcic Endocarditis, of which one form of dysentery is a congener.

Professor Mackenzie was married in 1892 to Miss Agnes Kathleen Vesey-Rogers of Dublin, who survives him. As a man, chivalry and gentleness and sweetness of disposition were outstanding characteristics. He was courteous and considerate to all; but "to those men who sought him sweet as summer." He was loyal to his Alma Mater, loyal to the traditions of his ancient family, loyal to his friends, in other words, a thorough Highlander who embodied the sentiments and the virtues of his receding race. And now he has wended his way to the "Land o' the Leal." Of great amiability and friendliness his bounties of good will came back to him in unstinted measure in his latter days of failing health; and the constant enquiries and frequent visits of innumerable friends must have assured him of their undying interest, affection and esteem. Few men in this community have had such a host of friends so genuine, so devoted, so sincere.

He took his recreation on the links, being an enthusiastic golfer; and in literature and in music. In literature he had a fine and a discriminating sense, and in music, like Lucentio, he knew "the cause why music was ordained. Was it not to refresh the mind of man after his studies and his usual pain?" His keen appreciation of literature on many lines stood him in good stead, and greatly helped to allay the tedium of his long illness which rounded out the circle of the year.

Lastly, he was a President of the students' Alpha Omega Alpha Society, of the Royal Canadian Institute, and from 1920 a member of this Senate.

The first practical expression and acknowledgment of our indebtedness to him, and desire to perpetuate the memory of his life and service, is contained in the recent announcement that Graham Colin Campbell, Esq., B.A., M.B., whilom of the University Staff, has donated a sum

of five thousand dollars for the purpose of founding a Scholarship, bearing the name of Mackenzie, in the Faculty of Medicine.

His spirit fareth forth from our companionship, *permultis bonis flebilis*, but his mortal parts lie buried at Gravenhurst in Muskoka, "as the tree fell."

*Dum Exspectamus, quoad diluculum Domini Diei.  
Requiescat in pace.*

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Basingstoke Hospital. "Hospital Organisation," (Delivered at Mount Sinai Hospital, N.Y., February 27th, 1919). "The Study of a Case and the Pathology of Acromegaly," "Generalised Blastomycosis," "A Case of Acute Haemorrhagic Pancreatitis due to Impaction of a Gall-Stone in the Opening of the Diverticulum of Vater," (American Pathologists and Bacteriologists, 1909). "On Cast formation in Experimental Nephritis," "On a Case of Congenital Stenosis of the Aorta at the Isthmus," "Pus Formation," Paper read at Royal College of Dental Surgeons. "Notes on the Newer Pathology of Syphilis," "Malignant Tumours as a Form of Tissue Mutation," "Adrenal Exhaustion," Address given at Opening Chapter A.O.A. McGill University, February 24th, 1912.

#### Intra-abdominal Haemorrhage from Stomach Due to Osteopathic Treatment: Report of Case.

—One of the possible dangers of indiscriminate mechanotherapy is illustrated by the case reported by B. J. O'Neill and W. W. Crawford, San Diego, Calif. A woman, aged twenty-two, eleven hours before admission to the hospital had been seized with severe abdominal pain and slight vomiting shortly after eating radishes, which had always disagreed with her. A person calling himself an osteologist, and claiming to be an improvement over the osteopath, was called in, and subjected her to vigorous abdominal massage, followed by manipulation of the neck. To accomplish this, he threw her face downward over his knee, striking her abdomen against his knee. This caused an immediate increase in the abdominal pain. This continued, became colicky in character, and vomiting in-

creased. The patient was taken to the hospital for treatment. A diagnosis of probable ruptured appendix was made and immediate laparotomy undertaken. When the abdomen was opened, slightly to the right of the median line, there was a gush of bright red blood and about three pints (1.5 liters) of fluid and clotted blood was removed with the fingers, swabs and pump, the clots being of varying consistency, none more than a few hours old. Careful exploration of the abdomen and pelvis revealed no abnormalities except a bleeding point on the greater curvature of the stomach, from a ruptured branch of the gastro-epiploic vein about half an inch from the border of the stomach, at the point at which the stomach crossed the spinal column. This was tied with fine catgut. Recovery was uneventful. —*Jour. Am. Med. Assoc.*, November 4th, 1922.

## Abstracts from Current Literature

## MEDICINE

**The Circulation of the Cerebrospinal Fluid, its Importance in Acute Cranial Injury.**

Jackson, Harry. *Jour. Amer. Med. Assoc.* Vol. 79, No. 17, p. 1394.

An abstracted review of a paper by the same author was published on page 433, of the June, 1922, issue of the Canadian Medical Association Journal, and this article is a further contribution to the same subject.

The author bases his observations on four hundred cases at Cook County Hospital in the past three years. The cerebrospinal circulation from the choroid plexus to the cerebral sinuses is described and the effect of trauma on this noted. The cerebral oedema which develops in head cases in twenty-four to forty-eight hours after injury subsides in from three to seven days in cases that recover. This oedema is due to haemorrhage, meningeal and arachnoid, and damage to the meninges and cortex with resulting increased intracranial pressure. This presses the brain upwards and against the skull with pressure on the sinuses and slowing of the rate of absorption of the cerebrospinal fluid. Brain anaemia will follow brain congestion unless the pressure is relieved, and a vicious circle is established, with resulting medullary pressure, slow pulse, rising blood pressure, rising temperature, increasing coma and death. The use of the spinal manometer gives an accurate record of the intracranial pressure, and the exact graduated withdrawal of cerebrospinal fluid by lumbar puncture will control this pressure. Cerebral anaemia may, in twelve hours, produce changes in the cerebral cells, inducing gliosis and resulting in post-traumatic neuroses.

The administration of sodium chloride in daily doses of 150 grains (10 gm.) in capsules, coated with salol, will reduce intracranial pressure it is claimed, and may be used in alcoholic oedema, as well as post-traumatic oedema. The above line of treatment replaces subtemporal operative decompression in the majority of cases, and shows a reduction of mortality of from twenty-five to fifty per cent. It is to be noted from experiments that anaesthetics rapidly increase brain oedema in these cases, and chloroform and ether are recoverable from the cerebro-

spinal fluid in increased percentages in traumatic cases. Even an increase of five per cent. in the degree of brain oedema may prove fatal.

CHAS. K. P. HENRY

**Nitrogen Retention in Chronic Interstitial Nephritis and its Significance.** Berglund, Hilding. *J.A.M.A.*, October 21st, 1922. Vol. 79, No. 17.

In the kidney not only does simple filtration occur, but definite chemical processes are carried on. There is the synthesis of hippuric acid from glycolic and benzoic acid, the regulation of the reaction of the urine from the bicarbonate carbon dioxide system of the blood, to the phosphate mixture of the urine, and the elimination of the end products of protein metabolism.

The phenomenon of disturbed nitrogen elimination is the most important from the standpoint of diagnosis and prognosis. The normal non-protein nitrogen of the blood consists mainly of a mixture of two classes, viz: those concerned in the anabolic, and those in the catabolic processes. In conditions of more or less marked non-protein nitrogen retention the different waste products such as urea, creatinine and uric acid are increased in approximately similar proportions. With an increase of non-protein nitrogen, one might expect an increase of the amino nitrogen or at all events a delayed deamination; this is not the case. On the other hand, in acute yellow atrophy of the liver, where the most extensive body tissue autolysis takes place, the amino nitrogen is increased while the urea nitrogen may be normal. A third variation is that found in gout in which the uric acid is increased while the urea nitrogen may again be normal.

An increase of the non-protein nitrogen in the blood above that which may be obtained in normal individuals subsisting on a high protein diet, means, in all cases an impairment of the kidney, which is bilateral. It does not, however, indicate the type of lesion. A patient with a chronic contracted kidney has suffered a loss of renal tissue anatomically as if removed experimentally, while in surgical conditions such as obstruction, or again in the acute infectious diseases there is a functional disturbance which readily improves with removal of the cause. The blood findings then must be interpreted according to the disease present.

A. H. MACCORDICK



**Lethargic Encephalitis.** (Editorial). *B.M.J.*,  
October 7th, 1922.

Few epidemic diseases in modern times can have aroused more general interest or provoked so much discussion and research as lethargic or epidemic encephalitis. A sifting of the accumulated pile of clinical and pathological material, and taking stock of the results of work extending over nearly four years, is presented to us in the recent report of the British Ministry of Health. We may be glad to find how much solid achievement can be recorded. In the first place, it is now generally conceded that the disease is a definite clinical and pathological entity. The pathology rests on a sure foundation of established fact, and although the actual histological changes found in the central nervous system may closely resemble those in other conditions, and notably in acute poliomyelitis, yet there are differences sufficiently distinctive to enable the experienced pathologist to make a definite diagnosis in any given case. The large amount of experimental work performed in this country, in America, and on the Continent, has been successful in establishing that the cause of the disease is a filtrable virus closely analogous to that of acute poliomyelitis. One of the most recent and hopeful achievements of experimental work has been the artificial production of an immunity to the disease in rabbits by vaccination with the living virus. Clinical observations have been equally fruitful in results. Indeed, the number of "types" or varieties of the disease reported has proved confusing. But despite the almost bewildering number of shapes under which the disease may appear there are yet some characteristic clinical pictures. Of these the first and most important is that which Netter originally described as the "triad" of symptoms, consisting of somnolence, fever, and ocular palsies. Next in importance we would place the form in which the clinical picture of paralysis agitans is produced—the so-called Parkinsonian type. In this form the disease constitutes a very striking and characteristic clinical picture which is even now not sufficiently recognized. Nor is it realized how commonly this Parkinsonian state is progressive and terminates in death within a space to be measured by twelve or fifteen months. Another type, sufficiently striking to deserve a name to itself, is the myoclonic form; it may vary from occasional involuntary muscular contractions,

enough just to disturb the patient or arouse the interest of the medical practitioner, to a condition where the patient lies in a classical "typhoid state," to which violent and irregular muscular contractions, especially of the abdominal musculature, lend a profound and, to the experienced eye, a disquieting significance. To the mental changes induced by the disease too little attention has been paid. Even when the patient seems to have made a good recovery it will usually be found that some degree of mental disability remains. On this point especially we are in urgent need of further information. This uncertainty, and the not infrequent cases in which relapses or recrudescences seem to take place, combine to make prognosis a matter of exceptional difficulty. He will probably be wise who takes pains to emphasize the gravity of the disease save in the most mild cases. Diagnosis also abounds in pitfalls. Except in certain cases—like that of the Parkinsonian type, where the picture is characteristic—it is generally safer to proceed to a diagnosis by way of exclusion than by any other method. The conditions most likely to be confused with it are, according to the report of the Ministry of Health, tuberculous meningitis, cerebral tumour, and cerebral haemorrhage. To this list it would be wise to add syphilis of the nervous system. Obviously, therefore, the aid of the pathologist should be sought in the examination of the cerebro-spinal fluid. For although he may not be able to find any absolutely typical changes, especially in late cases, yet a negative report will often be of great value by excluding tuberculous or syphilitic conditions.

We have already touched on the need for care in giving a prognosis. This caution is especially necessary when it is remembered that as yet we have no specific remedy, though we may hope that the experimental workers will perhaps be able to provide us with a truly specific method of treatment. In certain cases of the Parkinsonian type it seems that the administration of hyoscine in full doses has been productive of good, albeit of temporary, results. The treatment by means of fixation abscess, so much advocated in France, has not been much followed here. Nor has the treatment by urotropine or hexamine been much more satisfactory. In fact, we have yet to find a drug which can exert an effect on such inflammations of the central nervous system as encephalitis lethargica or acute poliomyelitis.



**Some Observations on the Bacteriology and Vaccine Treatment of Chronic Bronchitis; Based on 300 Cases, With Special Reference to Associated Nasal Infections.** Mackey, Leonard. *B.M.J.*, October, 192, p. 715.

In the author's opinion the treatment of chronic bronchitis with autogenous vaccines has sometimes failed because: (1) Between the time of collecting it and plating out a portion of the sputum for culture it has not been kept warm and some of the offending organisms have died out. (2) A swab from the nasal passages has not been taken at the same time and thus a type of organism, partially at any rate responsible for the bronchitis, but not necessarily present in the sputum, has been missed. A pneumococcus may be found in the nose but not in the sputum and vice versa in the case of the influenza bacillus. Interesting tables are given showing the number of times various micro-organisms are found in the nasal passages and sputum.

The patient may not even complain of a nasal catarrh yet an organism can be grown from the back of the nose, which, when added to the vaccine made from a culture of the sputum, is very "useful" in the treatment. The striking successes cited by Mackey occurred mainly with the pneumococcus, influenza bacillus, Friedlander's bacillus, and streptococcus mucosus. Mackey is not convinced that the diphtheroid bacilli are important. The mixed vaccines are sterilized by heat and fifteen doses of increasing strength are given at weekly intervals, taking care that the strength is not too quickly raised as to give rise to an unpleasant reaction. "Such a course appears to confer an immunity lasting a year or more in the case of those who continue to be carriers, and for an indefinite period in the case of those who cease to be infected."

ARCHIBALD MALLOCH

**Pernicious Anaemia.** Panton, P. N. *The Lancet*, November 18th, 1922.

Dr. P. N. Panton reported before the Medical Society of London, the cases of pernicious anaemia treated in the London Hospital from 1909 to 1920. There were 117 cases. The disease was the result of a slow, continuous haemolysis, and the diagnosis was made on the clinical state together with the blood picture. Other diseases gave the same clinical picture, and the blood picture might occur in such conditions as poisoning by arsenuretted hydrogen gas. (As H<sub>3</sub>).

Achylia, glossitis, fever and intestinal disturbances were fairly constantly present, but associated conditions were rare, except subacute combined degeneration of the cord. Oral sepsis was not a marked feature in the series, and although all the patients received thorough dental treatment, the writer does not think any case was cured in this way. Achylia was almost invariably present in the cases examined (33 of 35 cases). Pernicious anaemia may occur without achylia, and achylia frequently occurs without pernicious anaemia. Secondary anaemia might be followed by achylia and this might persist even if the anaemia were cured. Achylia might result from haemolytic anaemia, or if present before, favour the entry of toxin producing agents into the system. Pyrexia was noted in 90 of the 117 cases. Improvement was synchronous with a return of the temperature to normal; the more acute the disease, the more constant the fever. The fever suggested an infective origin, but might also be accounted for by the haemolysis.

In the treatment, oral sepsis should be attended to, but wholesale extraction of teeth was to be deplored and the writer considered vaccine treatment of no value. An artificial gastric juice should be given for the achylia. It has been claimed that splenectomy prolonged life, but the published results give the duration of life as about the same as in this series, where splenectomy was only done once. Blood transfusion was of value only in prolonging life. Arsenic had a well established reputation. Both organic and inorganic preparations were used and sometimes a change from one form to the other gave good results. Cases appeared to find a certain level where the blood count was about a million and where the destructive and regenerative process appeared to balance. At these times arsenic often did not seem to have any effect.

Bothriocephalus anaemia and an acute anaemia which sometimes developed late in pregnancy or during the puerperium could give the same blood picture, but in the former the characteristic glossitis was absent and in the latter the rapid onset or rapid recovery served to differentiate it from true pernicious anaemia.

Arsenuretted hydrogen poisoning which occurred on submarines during the war gave the blood picture, but in addition deep jaundice and haemoglobinuria. These cases if they lived a few days usually recovered. Grave anaemia may also occur as a result of paroxysmal haemoglobinuria from various causes and in blackwater

fever, and after injection of haemolytic serum or an incompatible blood transfusion. There are also three obscure types of haemolytic anaemias.

- (1) Occurring in children ending fatally in a few months.
- (2) A form like the arsenuretted hydrogen poisoning cases with attacks of jaundice and haemoglobinuria. These run a chronic course.
- (3) A rare form in which with the blood picture of pernicious anaemia there is intense pigmentation of the skin.

In the discussion that followed, Dr. Hurst said he thought achlorhydria was a predisposing factor. He had twelve cases in which the achlorhydria had preceded the anaemia by 1-12 years. The achlorhydria may be due to constitutional achylia gastrica (said to occur in 4% of normal young men)—or to alcoholic gastritis or where gastrectomy has been done for carcinoma. Pernicious anaemia occurs in 10% of these achlorhydria cases and Hurst says that this is due to oral sepsis and possibly some associated vulnerability of the blood or bone marrow. Streptococci were found in the duodenum of each of his twelve cases of pernicious anaemia with combined degeneration of the cord. Achlorhydria favoured infection of the intestine and by delay in digestion of protein favoured the absorption of toxins. Dr. Maitland Smith said in the series the average number of remissions was two, and the average duration of the remission was six months. Eight of the series were still alive and of these, three were living at seventeen, fourteen, and eight years after the onset of the disease. The seventeen year man was an apparent cure; he had no symptoms and his red blood count was 5,200,000. When in hospital thirteen years ago it was 1,500,000 and he had complete achylia.

Dr. Connybeare, who had collected the cases admitted to Guy's Hospital from 1909 to 1922, thought the disease was becoming more frequent, and that the gastro-intestinal symptoms were often due to arsenic. In his series gastrointestinal symptoms developed in 35% before arsenic was administered. All cases examined showed achlorhydria with one exception and that case recovered.

Dr. Riddock discussed the associated spinal cord lesions. In 84 per cent. they occurred in the postero-lateral columns. Similar lesions occurred in ergot poisoning and in pellagra, in both of which diseases the toxins were probably blood borne.

R. H. M. HARDISTY

**The Opaque Meal; Its Present Day Value in Gastric Lesions.** Scott, S. Gilbert. *Lancet*, November 18th, 1922.

The writer reports the results of the examinations by means of the opaque meal, for the last year at the London Hospital. The system used to check up and compare the x-ray and operation findings, is a perforated slip attached to the x-ray report sheet, and on this the surgical findings are noted at the time of operation. In this way a very close check can be kept.

In the method of examination employed by him, after the administration of the barium cream in small quantity careful palpation is made over the region of the stomach and the cream is thus smeared over its internal surface, which can then be examined from cardia to pylorus and small lesions recognised. Any lesion demonstrable by the ordinary radiograph can be seen by this method, and often an ulcer may be visualized that does not show in a radiograph. The diagnosis is made on direct evidence, and the clinical history does not matter. The writer thinks too much reliance is placed on the emptying time as this is influenced by many outside factors, e.g., apprehension, fear, hunger, etc. In a normal stomach a variation of four hours has been obtained by dieting.

Two hundred and forty seven cases of those examined were operated upon, and the x-ray diagnosis was found to be correct in 231. There were eighty-eight negative reports given all of which were proved correct by operation.

The cases where a wrong diagnosis had been made included five cases called negative which showed healed ulcer in one and ulcers high up in the cardiac portion in four. Four more which were called gastric ulcer, were found to be duodenal ulcer.

R. H. M. HARDISTY

## SURGERY

**Haemorrhagic Osteomyelitis.** Barrie, Geo. *Jour. of Bone and Joint Surg.*, October, 1922. Vol. 4, p. 653.

This is a bone lesion which has heretofore often been mistaken for sarcoma, when in reality it is of a benign character. It presents a pathological picture of highly vascular granulation tissue, appearing as replacement material in an area of spongy bone. In it are found so-called scavenger cells with many nuclei which have usually been taken for giant cells of malignant sarcomata.

Haemorrhagic osteomyelitis is commonest in the long bones of the lower limbs, the lesions as a rule being generally found in the spongy bone more frequently near the joint. In a skiagraph the area, if small, is clearly cut and rounded or oval. When larger it may be less clearly defined. It may cause expansion of the bone but does not break through periosteum or epiphyseal cartilage. If the periosteum has been broken through, malignant sarcoma should be suspected. The presence of haemorrhagic osteomyelitis may cause pathological fracture, which, however, will unite readily. The lesion is to be regarded as non-suppurative and inflammatory, in most instances of traumatic origin. It is not degenerative or destructive, but rather nature's effort to form primary replacement tissue in a previously destroyed bone area. The bony substance may be fully restored, while partial restoration may leave a fibro-cystic condition. A small lesion is apt to be taken for a bone cyst, a larger one, the size of an orange, for a sarcoma. The important point in treatment is to cure it and not to amputate the limb.

J. A. NUTTER

#### **Pain Due to Ilio-Costal Impingement.**

Gaenslen, F. J. *Jour. of Bone and Joint Surg.*, October, 1922. Vol. 4, p. 705.

The costal margin may at times rub against the crest of the ilium, thus causing pain. This has been described in cases of severe scoliosis. It may however occur in a variety of conditions where the diagnosis is not so obvious. The pain and tenderness occur exactly where the costal margin touches the iliac crest. The ribs involved are the tenth but especially the eleventh. The pain can be produced at will by allowing the patient to assume a relaxed sitting position, by which the costal margin is crowded against the crest of the ilium. Pain referred along the tenth, eleventh and twelfth ribs, caused by Pott's disease, renal calculus, or appendicitis, may appear in this area and may be excluded by its wider distribution and lack of localized tenderness. A therapeutic test is to pull the trunk away from the affected side by adhesive strapping. The patient may be given a seat higher on the affected side. Where the condition is pronounced resect a couple of the ribs in question. X-ray examination gives unsatisfactory evidence.

J. A. NUTTER

#### **Osteoarthritis of the Hip.** Parker, Geo.

*B.M.J.*, September 23rd, 1922, p. 539, No. 3221

A table of joint diseases prefaces this article,

in which Group A is characterized by diseases showing little or no affection of the fibrous or synovial structures but great bone and cartilaginous changes, as exemplified by osteoarthritis and gout. In the B group septic causes are acknowledged. In B1, we find suppuration, aseptic and tuberculous joints. In B2, there is no suppuration but fibrous overgrowth and ankylosis as exemplified by rheumatoid arthritis and gonococcal joints. B3, the last group in the writer's classification, leaves no permanent joint changes, as in true rheumatism.

The writer insists on the tendency of osteoarthritis of the hip to be essentially monarticular and of a distinctive character, though he admits that some authors disagree with him, considering that it may follow or precede similar changes in other joints. The symptoms are given in great detail, pain, tenderness, pseudo-locking, attitude, muscular wasting, grating, and x-ray changes. Sometimes the hip presents the exact picture of an impacted fracture of the neck of the femur. It is noted that lameness and limited movement may exist long before bone changes are shown in the x-rays. Pathological changes are thinning of the cartilage at the centre of the joint, thickening at the periphery, with new bone formation and eburnation.

As regards etiology, J. Llewellyn is quoted as pointing out the influence of trauma to the hip. This may be acute, or may be chronic due to knock-knee, flat-foot or a short leg. Mr. Strangeways, of the Cambridge Research Hospital, considers that thickening of the vessel walls may bring about changes in the nutritive value of the synovial fluid, which under normal circumstances, is a source of nourishment to the articular cartilage. Altered nutritive value in this fluid leads to cartilaginous degeneration and fibrillation. There is no evidence of a neural origin of the disease, and very little in favour of an endocrine influence, though osteoarthritic changes occur in acromegaly. P. W. Nathan with others is quoted in favour of an infective origin, streptococci being lodged in the neighbourhood of joints whose circulation is least active.

In treatment he recommends the remedying of any obesity, flat-foot, etc., capable of causing joint strain; limiting the exercise taken. Very early cases have a good chance of complete cure by absolute rest, the hip should be immobilized and no weight-bearing permitted. Such cases must be differentiated from gout and sciatica.



There is not the same tendency to ankylosis as exists in rheumatoid arthritis, and which makes immobilization so dangerous in this latter condition. More advanced cases need leather spicas, radiant heat and massage. Pain is relieved by ionization with salicylates and iodides, hot sand bags, and the inunction of salicylic acid and menthol. Arsenic and thymus gland are advocated internally. Removal of the head of the femur has given good results, the neck articulating in the acetabulum, while ankylosing the joint gives relief from pain at the expense of movement.

J. A. NUTTER

**Treatment of Chronic Synovitis of the Knee-Joint.** Atkins, G. G. *B.M.J.*, June 17th, 1922., No. 3207, p. 948.

The importance of this condition in army practice is pointed out. The knee-joint is full of fluid, while the vastus internus muscle is invariably wasted and cannot be fully contracted. In old-standing cases some lateral instability of the joint is usually present, tenderness on pressure may be elicited over various points around the head of the tibia. In the majority of cases the semilunar cartilage is not at fault, and a diagnosis of injury to it should not be made unless there is a very definite history of locking of the joint at the time of the original injury. A strain of the internal lateral ligament is a common cause of chronic synovitis, and very often simulates a torn cartilage. The principal nerve of supply to the knee-joint also supplies the vastus internus, hence injury to the knee reflexly inhibits the action of this important muscle. So long as the vastus internus suffers lack of tone the effusion will recur on the slightest strain, hence one breaks the vicious circle by re-establishing tone in this muscle. This is done by increasing the blood supply to the area affected, (1) contrast baths, (2) limited active exercise of all the muscles about the joint, and (3) massage. The patient is not confined to bed but allowed light exercise over even ground. Occasionally a tight bandage over wool is applied to the knee at night. Tender points found at the insertion of tendons about the joint are due to local strain. Care must be taken in the diagnosis to eliminate intra-articular conditions, tuberculosis of the knee-joint, and also an effusion of the joint due to a hypertrophic inrapatellar pad of fat, in which case suitable limitation of complete extension must be provided for.

J. A. NUTTER

## ANAESTHETICS

**The Anaesthetization of Patients for the Classical Caesarian Section.** Spencer, Herbert R. *B.M.J.*, November 11th, 1922, p. 905.

The writer is convinced of the harmlessness of chloroform given "à la reine" to mitigate the pains of labour, but insists on the necessity of anaesthetization by a specially trained qualified medical practitioner whenever an operation is required. Inhalation methods, he considers, are preferable in Caesarian section to spinal or infiltration anaesthesia, being more humane. In some pulmonary and cardiac affections, one of the latter methods may have to be used. Chloroform is more dangerous than ether when administered to the surgical degree, especially in pregnant women. The disadvantage of ether is that it leads to asphyxia of the infant, which is not true of chloroform administered to the minimal surgical degree.

The writer's method is as follows: No preliminary hypodermic is given. Chloroform is administered and as soon as the anaesthetist says the patient is ready, the operation is rapidly performed, and the child, usually delivered within thirty to forty seconds from the commencement of the operation, always breathes and cries at once. Ether is then administered for the rest of the operation, usually by the open method.

W. B. HOWELL

**The Accidents of Spinal Anaesthesia. How to Recognize, to Control and to Treat Them.** (Les Accidents de la Rachianesthésie. Comment les apprécier, les limiter et les traiter.) Hertz, J. *Paris Medical*, March 11th, 1922, p. 214.

Accidents in connection with spinal anaesthesia may be divided into immediate and secondary. *Immediate:* These are due to poisoning of the medulla. The symptoms may be slight, e.g., sensations of cold, pallor, sweating, nausea and vomiting; or severe, e.g., mydriasis, slow small pulse, loss of eye reflexes, cessation of respiration. Some of the deaths during spinal anaesthesia have resulted from other causes than the anaesthetic. Death occurring more than two hours after the injection cannot be attributed to the substance injected, as by that time it has all been eliminated. *Secondary:* Lumbar puncture alone sometimes causes symptoms which last



several days, such as headache, pain in the back, nausea and vomiting. Septic infection may occur. Cerebrospinal meningitis has been precipitated in a carrier of the germ.

There are two sets of symptoms, equally transient, associated with variations in the cerebrospinal pressure. With hypertension there may be headache, pain in the back and nausea, which are relieved by drawing off some of the cerebrospinal fluid, or somewhat similar symptoms with stiffness of the neck, mydriasis, and weak pulse due to hypotension. Doses of artificial serum given hypodermically have relieved the latter type of case. Paralysis of sphincters is very rare. Persistent headache and various paralyses occur sometimes in patients with syphilis. Headache, paralysis of the oculomotor nerve and of the sphincters have been commoner with stovaine than with novocaine. These paralyses appear from the eighth to the fifteenth day after anaesthesia and disappear usually in two or three weeks.

For the prevention of sequelae attention must be paid to certain points. Some of the cerebro-

spinal fluid should be withdrawn, a very fine needle should be used, the dose should be accurately gauged, and stovaine should be abandoned. The quantity of cerebrospinal fluid withdrawn should be regulated according to the height of anaesthesia desired and the existing pressure in the subdural space. It is easy to determine the latter with a Claude's manometer.

In doubtful cases, the immediate examination of the cerebrospinal fluid for Wasserman's reaction may be done and, if positive, the spinal method abandoned.

Spinal anesthesia is suitable to all ages.

*Treatment of Accidents:* A prophylactic hypodermic injection of caffeine should be given and the dose repeated on the appearance of any of the lesser symptoms. On the appearance of any of the graver symptoms, such as failure of respiration and pulse .25 gramme of caffeine should be injected intraspinally with some force. Artificial respiration should be kept up until there has been time for the elimination of the anaesthetic.

W. B. HOWELL

**Present Status of Blood Nitrogen in Surgical Lesions of the Kidney.**—W. H. Olmsted and J. R. Caulk, St. Louis, point out that there is considerable difference in the interpretation of the retention of blood nitrogen in the different classes of kidney disease. In chronic nephritis, such as is seen in the medical wards of any hospital, there has been a gradual destruction of kidney tissue, analogous, from the functional standpoint, to the experimental surgical removal of kidney tissue; while, in the infectious and obstructive processes of the genito-urinary tract seen by urologists, the loss of kidney function may be, in a large measure, of a functional nature. After drainage and removal of the obstructions, the functional loss may be partially regained. If the latter conditions have gone on long enough, permanent loss of kidney function results, just as in the case of chronic nephritis. Among the authors' cases, the cases of chronic nephritis were not materially improved, as shown by the failure of the nonprotein nitrogen to go down after having reached this level, and by the high death rate. Cardiac patients show a decided difference from nephritis. With them, recovery from retention of nitrogen depends

disease due to obstructive and infectious processes. Their experience has been that if the blood nitrogen does not reach a normal level within a month of hospital treatment, it will never do so. The interpretation of the retention entirely on how well the heart will respond to treatment. Still better are the results of kidney tition of urea depends on the nature of the disease present, and especially on the presence of systemic intoxication. With retention of urea, bilateral disease is always present, whether anatomic or functional or both.—*Jour. Am. Med. Assoc.*, October 21st, 1922.

**Lumbar Puncture in Intracranial Haemorrhage of the Newborn.**—De Stephano (*La Pediatria*, January 1st, 1922) says that lumbar puncture is definitely indicated in intracranial haemorrhage of the newborn. It should be practised as soon as possible, and repeated if necessary several times. There is no danger if it is done with careful technique. The effect is both immediate and remote, and tends to lessen nervous symptoms of encephalic origin. In addition injections of adrenaline, calcium chloride, or normal serum may be given.

## News Items

## GENERAL NEWS

Dr. Haigh, a member of the Epidemic Commission, of the League of Nations, who visited the provinces of Nikolaieff, Kherson, and Odessa, in September, describes the serious situation of the medical and health institutions in a report addressed to Dr. Nansen. The hospitals lack everything for their good working. Drugs, linen, soap and disinfectants are all wanting, even clinical thermometers are very scarce.

*Financial "light ahead" in Periodic Examinations.*—Fiske gives the annual cost of sickness per head of the population as \$30, which is \$150 per average family or about \$270,000,000 to \$300,000,000 annually in Canada. This item yields some most interesting consequences. Contrary to general belief, "doctor's bills" form a very small item in cost of sickness, the total of physician's share of the total bill averages, on pre-war figures, only \$1.00 per head, \$5.00 per family, or \$9,000,000 for all Canada. If we treble this amount for advanced rates since the war, still the physician receives only 10% of the total cost of sickness, or \$27,000,000 annually out of a total cost of \$270,000,000. Periodic examinations of everybody at \$5.00 per head (which is but 1/6 of the cost per head of being sick) would yield the medical profession \$45,000,000 from this source alone, as compared with a total now, of \$9,000,000 or even of the exaggerated figure of \$27,000,000. Moreover, the improved financial status of the public due to earlier treatment, lessened sickness, etc., would make collections better. Finally, note that this new \$45,000,000 would be in addition to whatever income physicians would still receive for therapeutic services, which would probably be about as much as at present; not because sickness would not be reduced but because much sickness not now treated would come to light. From 30 to 60% of sickness requiring medical services is now never treated. In other words, the reduction in sickness now treated by the medical profession would be, in part at least, offset by the increase in treat-

ment of sickness now escaping attention. Periodic examinations would thus be of immense ultimate economic value, (a) to the public, in reducing the total cost of sickness to say, \$100,000,000 in Canada instead of \$300,000,000 as at present and, (b) to the medical profession, in yielding to the latter from 40 to 50% (\$40,000,000 to \$50,000,000) of the future reduced cost, rather than a mere 10% or less (\$27,000,000 to \$9,000,000) of the present much greater cost.

H. W. HILL

Of interest to every member of the profession in Canada, as well as to the University of Pennsylvania, from whose gazette we copy this notice, was the unveiling last summer, of the war memorial to the men of Cambridge-shire, in England. The sculptor was Dr. F. Tait McKenzie, director of the department of physical education at the University of Pennsylvania, a Canadian and a graduate in medicine of McGill University, whose name is honoured throughout the world for his beautiful statuary as well as for his pioneer work in the restoration of crippled soldiers during the war. The memorial was unveiled by the Duke of York, and represents the homecoming of a young soldier. The modelling, which occupied three years, took place in Dr. McKenzie's studio in the tower of the gymnasium, at the University of Pennsylvania. A young American, captain of the swimming team in the University, posed for the figure, the head of which was modelled from a young English student at Christ Church College, Cambridge. The figure, it is claimed, combines the best type of young manhood in England and America as seen through Dr. McKenzie's experienced eyes and is another link between the University of Pennsylvania, its older sister in England, and Canada. The statue is erected at the junction of three roads in the centre of Cambridge, and its unveiling was witnessed by an immense crowd. As soon as the ceremony was over, wreaths and bouquets of flowers were heaped in great masses about its pedestal.

## NOVA SCOTIA

In summarizing the work of the public health nurses of the Massachusetts-Halifax Health Commission from the Health Centres of Halifax and Dartmouth, the November report sets forth that a total of thirty-four hundred and eighty-eight visits were made in a total of twenty-three hundred and seventy-three homes. In addition, the visiting house-keepers made three hundred and twenty-one visits making a total of thirty-eight hundred and nine instructional visits.

At the end of November, twenty-two hundred and twenty-seven families were receiving public health nursing guidance from the Health Centres: of these, twelve hundred and forty-eight are under the supervision of the Health Centre clinics where their various members may also receive medical, dental and nutritional guidance from the physicians and dentists connected with these clinics. The number of babies under two years of age receiving public health nursing guidance totals one thousand and ninety-four. One hundred and thirty-nine prenatal visits were made by public health nurses during November, twenty-six to clinic cases, and one hundred and thirteen to other expectant mothers.

The tuberculosis examiner conducted a total of twenty-three clinics and made a total of forty-three complete chest examinations in this service, in addition to services given at the city tuberculosis hospital and Dalhousie medical school.

The Saturday morning health classes for children have attracted considerable attention during November. Health lessons in song have proved a most popular feature. Miss MacLeod, of Halifax Ladies College, kindly volunteered to act as accompanist at these morning sessions. An increased interest has been manifested ever since the Healthland Railway, so successfully used at the G.S.V.A. Exhibit at the Armouries, has been set up at the Health Centre. Many of the railway stations along the line, suggestive in appearance as well as name, have been brought into the most recent health song, set to the rousing tune of Marching Through Georgia, Bathubville, East Toothbrush Cereal, Hot Soup Springs, Vitamine Centre, etc. This feature of the Health Centre activities has raised the attendance of children to thirty or more every Saturday morning, and makes a total Saturday attendance of children of more than fifty.

## NEW BRUNSWICK

Next year the New Brunswick Medical Society will establish a new precedent by having its annual meeting outside the boundaries of the province. In conjunction with the Maine Medical Association, the New Brunswick organization will hold a combined meeting at Houlton, Me., on June 12th and 13th next. Much good is expected to result from this getting-together and it is hoped that the meeting will not only prove of exceptional interest from a scientific standpoint but will also tend to increase the good will and friendliness that has so long existed between those who practice on different sides of the international border. An exceptionally fine programme is in course of preparation and already there is no doubt that the meeting is going to prove at least as instructive and entertaining as has any previous annual meeting.

It is given to but few of us to experience the outpouring of good will that was apparent when it became known that Dr. Stewart Skinner, for years the registrar of the N.B. Council had found it necessary to seek treatment at Muskoka. His official position had brought him in contact with all the physicians of the province and by all of them his fine character was appreciated. Of an even and placid temperament his counsel was sought by many—especially the younger men—and his services were freely offered wherever they might be of use. A good student, a hard worker and an enthusiast in his chosen profession, he upheld the highest traditions of our art and his kindness of manner and his deep Christian charity endeared him to all those with whom he came in contact. Though past the age when military service could be expected from him, he answered the call of his country in the great war and undoubtedly the unusual hardship and necessary exposure were the causes of his present condition. His friends in the profession sincerely hope that his case will be one of the many in which proper environment and treatment establishes a complete cure. To those of us who know his many good deeds and charitable actions, nothing less seems possible for one whose whole life has been a shining example of what a doctor's life should be—unobtrusive, self-sacrificing and charitable to the fullest possible extent.

At the last meeting of the N.B. Society, the executive was instructed to make the necessary arrangements preparatory to increasing the fee charged for insurance examinations. It was hoped to get the profession to unanimously agree on a fee which we had reason to believe would be acceptable to the Canadian companies. Each practitioner was asked to pledge himself not to charge less than the agreed upon fee. After much correspondence and work the executive has decided to pass the responsibility back to the society as it seems impossible to get even a reply from a large proportion of the members of the society. The replies received make very interesting reading as practically all seem to fear that if they insist on getting the new fee, someone in their immediate neighbourhood will be willing to do the work cheaper and for

this reason will have a monopoly of the business. Experience has shown these fears to be well founded. As one doctor puts it, "We have a lot to learn from the labour organizations." He suggests that a chair of Business be established in all our medical colleges. There is much merit in the suggestion. Another practitioner seems to express the feelings of a majority of our members in a letter from which the following extracts will probably prove of interest in any part of Canada where an increase of the insurance fee is under discussion:

"I am in favour. . . . ."  
 "How many doctors will live up to the schedule?"  
 "There is not that bond of unity or spirit of tolerance or co-operation which should exist between members of the medical profession . . . ."  
 "I am not refusing . . . . I am waiting . . . . ."

The opening of the new Health Centre in the finest residence in Saint John marks an epoch in the history of preventive medicine in the Maritime provinces. For Dr. Roberts, the Minister of Health, it is the culmination of his efforts to lay in New Brunswick the foundations of the most modern health legislation to be found on this continent. Of its value to the city and surrounding country little need be said in a journal intended for medical men. The citizens responded generously in equipping and supporting the venture and the staff is well organized and prepared to demonstrate the usefulness of this innovation in the life of the city.

The Health Centre has been officially opened and has had an auspicious start on its career. The province, the city, the citizens, and the medical profession all united to enable it to begin its work under most favourable conditions. From now on its future depends on itself and in this connection it might be suggested that the powers-that-be should make a great effort to work in harmony with the physicians and avoid even the slightest suspicion of friction or jealousy. The paths of both lie in the same direction. With the co-operation of the medical men the Health Centre can prove of inestimable value to the city; without it, it will prove to be merely another fad which is sure to be short-lived. With the Minister of Health and the various heads of departments there will be no difficulty but it might not prove amiss if they would emphasize to their subordinates the necessity of confining themselves within the limits of their work and so avoid trespassing on the field of the practitioner. There are some people who lose their sense of proportion (if they ever had one) and imagine that their particular hobby is of the greatest importance, to the exclusion of more important things; and in such an undertaking as a Health Centre, those in charge must realize that even of more importance than the organization is the faith that patients have in their family physician. It would be most regrettable if the Health Centre of St. John failed to have the hearty support of all the doctors in the city. Such a thing might easily be caused by injudicious remarks made by any of the staff in reference to the professional ability of the city's general practitioners. *Verbum sat sapienti.*

## QUEBEC

Orders-in-Council providing for the appointment of Dr. Eustache Langis, Matane, as joint coroner for the district of Rimouski, and of Dr. T. O. Martin, Montreal, as Inspector of Hygiene, were signed to-day by the Lieutenant-Governor.

**Cancer Research.** The offer of Lord Atholstan of a prize of one hundred thousand dollars for the discovery of

a cure for cancer has brought 2,715 claims for the award from forty-one countries. On advice of the Royal Colleges of Physicians and of Surgeons of London, claimants, to entitle them to a consideration of their alleged cures in competition for the prize, must satisfy a recognized medical faculty or medical society in his or her own country, first, that there is some scientific basis to justify experimental investigation of the professed cure, and that any cases said to be successfully treated were in fact cases of cancer.



Claimants who have satisfied the above conditions should request the medical faculty or medical society to report to the Imperial Cancer Research Fund. The Imperial Cancer Research Fund will then determine the means to be adopted to investigate the claims of the applicant if the Committee are of the opinion that a case for investigation has been made out. The competitors are advised that the recommendations of the Royal Colleges of Physicians and Surgeons therein are adopted as the basis of enquiry.

*Unveil Painting of Dr. Penhallow.* Many friends and associates of the late Dr. David Pearce Penhallow, F.R.S.C. Macdonald Professor of Botany at McGill University from 1883 to 1910, witnessed the unveiling in the botanical laboratory of the Biological building of a portrait presented by his widow. Dr. C. E. Moysse, emeritus vice-principal and emeritus dean of the Faculty of Arts, performed the ceremony, following a tribute by Professor Carrie M. Derick, professor of morphological botany, who was associated with Dr. Penhallow in his work at McGill. Among those present at the ceremony were the executive of the National Council of Women, now in session here, their hostesses, officers of the Montreal Local Council, and representatives of affiliated societies, who were guests of the university for the afternoon. It was appropriate, Professor Derick pointed out, that the portrait of Dr. Penhallow should be unveiled in the presence of the National Council of Women. He advocated equal opportunities for men and women at a time when such a doctrine was not as popular as it is to-day. The first woman on the McGill teaching staff was appointed at his suggestion, with the understanding that she should have equal opportunities with men. Later, he advocated her promotion. Dr. Penhallow also showed great interest in the work of the National Council of Women. Professor Derick then sketched Dr. Penhallow's distinguished academic career. Dr. Moysse's tribute was the tribute of an old friend. The whole university had a great respect for Dr. Penhallow as a man and a scholar. "This university will be happy if it can get and keep men like Dr. Penhallow," he concluded. Guests were received by Sir Arthur and Lady Currie, professors and their wives. Tea was served in the laboratory.

*Hospital Campaign Started.* A million dollar anti-tuberculous hospital, with an endowment representing a cash expenditure of nearly two millions, in return for a subscription of \$150,000, is the substance of the offer made by the City of Montreal and the Provincial Government of

Quebec to the people of Montreal, by the gift of Mont Lasalle site and building in Maisonneuve and cash grants which they have subsequently offered, subject to the citizens raising the sum above mentioned by public subscription. The city gave over 600,000 square feet of land in Maisonneuve Park and a large building some time ago for this purpose, subject to its being equipped as an anti-tuberculosis hospital. They later agreed to subsidise 200 free beds in the hospital, to the extent of \$73.00 per year for twenty-five years, on condition that the beds should be available to any citizen of Montreal suffering from tuberculosis regardless of creed, colour or nationality. It was found necessary to spend \$300,000 in order to turn this property into the largest hospital of its kind in Canada, and equip it with the best installation possible to combat the disease. Of this sum, the Provincial Government has given \$150,000, subject to the citizens of Montreal raising by public subscription the remaining \$150,000. A subscription campaign opened December 11th continuing for a week, during which time it was confidently anticipated that the required sum would easily be attained. The effort is under the patronage of Lord Shaughnessy, Mgr. Gauthier, Hon. L. A. Taschereau, Mayor Martin. No canvassing was to take place. The committee in charge of the campaign declare that the need is so obvious, and the issue so simple that personal solicitation in their opinion should not be necessary. The issue has been clearly stated, namely, the raising of \$150,000 by public subscription in order to secure for Montreal a \$3,000,000 hospital, and to lay the foundation of a work for the stamping out of tuberculosis which the Provincial Government has pledged itself to carry throughout the province. The attitude of the committee now is that the people of Montreal and district are free to take it or leave it and the decision lies in their hands.

*Fighting Tuberculosis.* The proposal to equip the civic building in Maisonneuve Park as an anti-tuberculosis hospital draws attention once more to the need for government action. The enterprise and devotion of private individuals in equipping and maintaining various hospitals and other institutions designed to combat the worst scourge of the century is wholly admirable, and not a word can be said against it. But individual scattered efforts are, after all, infinitesimal when regarded as preventive factors. If they could all be co-ordinated under one central direction and management; if the government were to take up what is undoubtedly a duty it owes to the nation, and tackle this problem of fighting tuberculosis on an adequate scale, there might be some hope of reducing the death toll taken annually by this grim reaper of death.

## ONTARIO

District No. 2 of the Ontario Medical Association, comprising the Counties of Carlton, Dundas, Glengarry, Prescott, Renfrew, Russell and Stormont, held its annual meeting at Ottawa on Thursday, November 2nd. The morning session was held at the Ottawa General Hospital, when Dr. Eugene St. Jacques, Surgeon to the Hotel Dieu, Montreal, gave a lucid and interesting talk on Thyroid Pathology; Hypo- and Hyper-thyroidism; their clinical aspects and therapy, illustrating the same by clinical cases and lantern demonstrations. During the noon hour, buffet luncheons were served at the various hospitals. Between 12:30 and 2:30 p.m. operative clinics were simultaneously conducted at St. Luke's Hospital and the Ottawa General Hospital, many members of the staff taking part. The pathological department of St. Luke's Hospital also showed some very interesting specimens, and, between the hours of two and three o'clock, gave demonstrations of the method of making chemical examinations of blood and urine. At 3:00 p.m. an interesting and instructive medical clinic was con-

ducted by Dr. W. T. Connell, Professor of Medicine, Queen's University. At 6:00 p.m. the members sat down to an informal dinner at the Chateau Laurier, which was immediately followed by addresses from Dr. E. R. Secord, of Brantford, and Dr. T. C. Routley, of Toronto, President and Secretary, respectively, of the Ontario Medical Association. The attendance during the day was 148, and in the opinion of all those present the meeting was successful from every point of view.

The North Simcoe branch of the Ontario Medical Association, met in Alliston on December 14th. Dr. N. B. Gwyn, of Toronto, addressed the meeting on "Pneumonia and empyema, their diagnosis and treatment."

The Ontario Medical Association has sent out a post-graduate schedule of extension lectures and demonstrations. These lectures and demonstrations are largely the



results of the work of the committee on education. An extensive programme is offered dealing with hygiene and preventive medicine, physiology and biochemistry, pathology, pharmacology and therapeutics, medicine, paediatrics, surgery, obstetrics, gynaecology, radiology, oto-laryngology, and some general miscellaneous subjects. The committee on education consists of Drs. J. H. Mullin, Hamilton, chairman; T. C. Routley, Toronto, secretary; L. J. Austin, Kingston, J. W. Crane, London, V. E. Henderson, J. J. Middleton, George S. Young, Toronto, A. F. McKenzie, Alliston, and the president of the Ontario Medical Association, Dr. E. R. Secord, Brantford. The interest in these demonstrations has been growing and they have now become a very material part of the Ontario Medical Association's work.

At a special meeting of the Academy,<sup>1</sup> Dr. Andrew Fullerton, C.B., C.M.G., delivered an address on, "Aches and pains of renal origin."

The Sault St. Marie medical society met on November 3rd. Dr. N. B. Gwyn, of Toronto, spoke on the diagnosis and treatment of pneumonia and its complications.

At a stated meeting of the Academy of Medicine, Toronto, the inaugural address of the president, Dr. Harris, was followed by a paper on "Recent advances in x-ray therapeutics," by Reginald Morton, of London, England.

Dr. F. A. Cleland, of Toronto, addressed a meeting of the Peterborough County Medical Society, on the evening of December 7th, on the subject, "Diagnosis and treatment of acute abdominal pelvic conditions."

The Norfolk County Medical Society held a meeting in Simcoe, on the evening of December 6th, at which an address was given by Dr. Geo. A. Ramsay, of London, on "Fractures."

On the evening of December 8th, Dr. P. G. Goldsmith, of Toronto, addressed the North Waterloo Medical Society, at Kitchener, taking as his subject, "The management of some common complaints among oto-laryngological patients."

The Medical Alumni Association, of the University of Toronto, met to unite and reorganize on November 7th. The Association is to include all medical graduates of the University of Toronto schools, and the old Trinity, Victoria, and Toronto Medical schools. It is hoped that the active interest in all matters relating to medical education will be stimulated by the Alumni Association. Dr. H. B. Anderson, Toronto is president, and Dr. Harley Smith, Toronto, is secretary-treasurer.

The corner stone of the new Isolation Hospital, in Kingston, was laid on October 31st. This new department of the General Hospital which has cost in the neighbourhood of \$200,000, will be one of the most modern on the continent. Those who took part in the ceremonies were, R. E. Kent, chairman of the General Hospital board of governors, R. Bruce Taylor, principal of Queen's University, W. F. Nickle, M.P.P., and Dr. J. C. Connell, dean of Queen's Medical Faculty.

On the evening of December 1st, Dr. R. D. Rudolf, of Toronto, addressed a meeting of the Perth County Medical Society, in Stratford, on the subject, "The treatment of insomnia;" and on December 8th, Dr. W. L. Robinson, of Toronto, addressed the same society on, "Classification, pathology, diagnosis, and treatment of

new growths." There was a good attendance at both meetings and the discussion which followed the addresses showed that the members were keenly interested.

A special meeting of the Ontario Medical Association was held in the Academy of Medicine, Toronto, on Wednesday, December 6th, for the express purpose of discussing medical legislation. The meeting was called to order by the president of the Association, Dr. E. R. Secord, of Brantford, who, asked the 1st vice president Dr. J. F. Argue, of Ottawa, to take the chair. Dr. John Ferguson, chairman of the Committee on Legislation and By-Laws, in presenting the subject for discussion, outlined four possible lines of action for the Association to consider, these being as follows: (1) A policy of "watchful waiting," making no attempt to secure advanced legislation, but merely opposing any encroaching measures that may be suggested by the irregulars. (2) A policy of progressive action. This again may be subdivided into, (A) Pressure brought to bear on the government to introduce a Medical Bill. (B) The introduction, as a Private Bill, of new medical legislation by the joint representatives of the profession. (C) The introduction, as a private measure, of an amendment to the present Medical Act, giving a new and comprehensive definition of the practice of medicine. After very lengthy deliberations and discussions which were participated in by most of the large gathering present, it was unanimously decided that the Association adopt a policy of progressive action. Assurances having been received that the College of Physicians and Surgeons of Ontario were willing to put forth special efforts during the coming session of the Provincial House calculated to secure adequate medical legislation, it was further decided that the Ontario Medical Association should whole-heartedly support the College in such efforts. Furthermore, the Ontario Medical Association decided to respectfully request the College to direct particular attention towards securing the necessary incorporation in the Medical Act of a proper and comprehensive definition of the practice of medicine. It is worthy of note that the College of Physicians and Surgeons, the Ontario Medical Association, and the three Universities of the province have respectively appointed representatives to a committee known as the Joint Advisory Committee, to which body is being entrusted the duty of outlining and co-ordinating the complete line of action which it is expected shall be officially sponsored by the entire medical profession of the province. The practitioners of medicine in Ontario, having now definitely decided to actively press for proper medical legislation, it behooves every medical practitioner in the province to get behind the idea and render every possible assistance.

The annual dinner of the St. Thomas Medical Society was held in the Grand Central Hotel, St. Thomas, on the evening of Friday, December 8th. The guests of the evening were, Dr. E. A. Morgan, of Toronto, who spoke on "The pneumonias of childhood;" and Dr. T. C. Routley, of Toronto, secretary of the Ontario Medical Association, who talked on the activities of the provincial Association. There was an attendance of twenty-four, which evidenced the interest being taken in the local medical society by the practitioners of the district. Both papers were keenly discussed, and from every point of view, the meeting was quite a success.

Dr. Perry Goldsmith, of Toronto, addressed the Niagara District Medical Association in Niagara Falls on the evening of Thursday, December 7th, on the subject, "The management of some common complaints among oto-laryngological patients." There was a splendid representation present, and the very practical manner in which the subject was presented was appreciated by the members attending.

Dr. H. I. Kinsey, of Toronto, addressed the Midland Division of the Simcoe County Medical Society at Port McNicoll on the evening of December 4th, his subject being "The differential diagnosis of diseases of the chest."

## BRITISH COLUMBIA

The British Columbia Medical Association through its Executive and Committees is having an exceptionally busy time. The Legislative Committee under the chairmanship of Dr. P. A. McLennan has done excellent work at Victoria in connection with the "Chiropractic" Bill, the result of which is not yet to hand. It is, however, confidently expected that the proposed "Bill" brought forward by the chiropractors to enable them to practice without the existing qualifying examination will be unsuccessful.

A proposed "Public Health Campaign" on an extensive scale is under consideration by the Educational and Publicity Committee. Apart from a systematic "Press" campaign it is hoped to put on a series of public addresses throughout the Province in February next.

The Industrial Service Committee is engaged on various important matters especially in regard to Industrial Medical Contract Practice in connection with which there are many much needed reforms.

*Vancouver Medical Association*

Dr. E. Murray Blair has recently started practice in Vancouver.

Dr. R. J. Elvin has recently left Vancouver to take up special work in California.

The clinical meeting of the Association was held in the Vancouver General Hospital on the 21st of November, and several interesting cases were shown.

Dr. J. A. Sutherland is at present in the Old Country taking a post-graduate course, and Drs. W. B. Burnett, B. H. Champion and H. B. Gourlay have been East for the same purpose.

The annual dinner of the Vancouver Medical Association was held in Vancouver on Thursday, November 9th. One hundred and fifty members of the Association were present, and spent a very enjoyable evening.

The October monthly meeting of the Association was held in the University of British Columbia, on the 7th of November, the subject for discussion being Gastric and Duodenal Ulcer, in which Drs. W. S. Baird, H. H. McIntosh, J. M. Pearson, A. B. Schinbein and H. B. Gourlay took part.

A very full meeting of the Association was held in the University of British Columbia, on December 5th, when Dr. Whitnall, of McGill, delivered a most interesting lecture on "The Anatomy of Referred Pain." At the request of the Association, Dr. Whitnall also discussed the chiropractic situation as it presented itself to him recently at Victoria.

*Fraser Valley Medical Society*

Dr. E. J. Rothwell, President of the Fraser Valley Medical Society has resumed office work after a prolonged illness.

Dr. D. F. Carswell, who has been assisting Dr. Rothwell, has left on a trip for Kansas City.

Dr. George Wilson has returned from a three months trip to the East where he visited the large clinical centres.

The Society for the past two meetings has had a change from regular clinical addresses; all members of the Society who served overseas during the war giving short illustrated talks on the countries visited. The following doctors taking part: Drs. Manchester, Green, Clark, Wilson, Cannon and Purvis.

*Victoria Medical Society*

Dr. Milton G. Sturgis, also of Seattle, has recently read a paper on "Unrecognized Fracture of Spine."

The Society meets twice monthly, and a full programme for the winter session has been arranged.

Dr. H. T. Buckner, of Seattle, addressed the Victoria Medical Society on "Fractures" and showed many excellent mechanical appliances used by himself in treatment.

This Society has had several most interesting addresses since the annual meeting in October. At the annual meeting officers were elected as follows: President, Dr. H. M. Robertson; Vice President, Dr. M. J. Keys, and Hon. Secretary-Treasurer, Dr. M. W. Thomas.

Professor S. E. Whitnall, Reford Professor of Anatomy at McGill University, addressed the Society on November 30th and dealt with the nervous system and referred pain. Professor Whitnall was the guest of the Society at a luncheon at the Empress Hotel, on December 2nd. On this occasion he told the members of the newer studies in Anatomy. The profession in the "far West" is most appreciative of these opportunities to hear leading men from the larger centres and trust it will not be long before other teachers and leaders in the profession in the East will find it convenient to visit the Pacific Coast.

Professor Whitnall appeared before the Legislative Committee which has under consideration the proposed Chiropractic Bill introduced at the present session of the British Columbia Legislature. The expert evidence presented was much appreciated and the clarity and simplicity of the whole demonstration could not fail to impress the members who now possess a clearer understanding of the simple strength of the spine.

## Obituary

The many friends of Dr. Robert W. Powell of Ottawa will learn with deep regret of the death of his wife on the evening of December the 29th. after a lingering illness.

Dr. William Jones, formerly of Hamilton, where he

had practiced for nearly forty-five years, died suddenly in Toronto during November.

Dr. Ernest B. Boyes, formerly of Toronto, died in Denver, Colorado, on November the 7th.

## Book Reviews

**Animal Parasites and Human Disease.** By Asa C. Chandler, M.S., Ph.D., Instructor in Biology, Rice Institute, Houston, Texas. Second Edition, revised. New York: John Wiley and Sons, Inc. London: Chapman and Hall, Limited, 1922.

This book professes to be a compilation and to be written for the general public rather than for medical men. It aims to supply readable information concerning the nature and importance to mankind of the animal parasites. In design, in arrangement of matter, and in its illustrations the volume is well adapted to its purpose. The references to current literature make it evident that the author has worked hard and read widely in order to bring up to date this second edition of his book.

While the volume is so praise-worthy, it still has defects. It is, perhaps, too large and too technical to be entirely successful as a popular exposition. On the other hand it is, occasionally, insufficiently exact in detail to be entirely successful as a text-book. If, perhaps, fifty pages were removed by the elision of certain unnecessary comments and surmises, the book would be more widely and warmly accepted as a classroom text book than it has been. There are passages where rather too enthusiastic acceptance of new, unconfirmed, observations and hypotheses gives wrong impressions.

On the whole, the book is one which should find a place in every medical library. Its author is to be congratulated on his production and upon the promise, inherent in this edition, of improvement and continued usefulness.

J. L. T.

**Manual of the Diseases of the Eye** By Chas. H. May, M.D. Tenth Edition revised. 377 illustrations including 22 plates and 71 coloured figures. Price, \$3.50. Published by William Wood Company, New York.

The author said in the preface to the first edition of this work, published twenty-two years ago, that he had endeavoured to give the fundamental facts of ophthalmology, and to cover all that is essential in this branch of medicine for students and general practitioners. This tenth edition, and the fact that the work is now published in almost every language of Western Europe, and in Japanese, and Chinese, prove that he has succeeded in his effort, probably beyond his dreams. It is a model book, comprehensive, accurate, and very readable. The coloured illustrations are perfection itself. One need not fear to recommend it, confident that the reader will find knowledge and wisdom in its pages, and profit and pleasure in their perusal.

Nothing but good can be said of it as an example of medical-book-making.

F. C. T.

**Ophthalmology, Retinoscopy, and Refraction** By W. A. Fisher, M.D., F.A.C.S., with 248 illustrations including 48 coloured plates. Published by W. A. Fisher, 31 North State Street, Chicago.

This work is published with one purpose in mind; to teach the general practitioner, and the student, how to investigate eye-conditions and how to prescribe lenses for errors of refraction discovered. For those students who can work from a set of ideas and rules set down baldly in short form, as in paradigm, it will probably be successful; for those who need a story told, it will be disappointing.

The idea of the use of his pictures, published in the book, in a schematic eye, made according to his directions, is clever, and ought to be helpful. The text is orthodox. When the avowed plan is to make the physician feel at home in a comparatively, to him, unknown field, and at small expense to himself, (note the suggestion to have a carpenter make a schematic eye to use the pictures provided), one wonders what is gained by including the pic-

tures of elaborate and expensive apparatus, which, even if helpful (a moot question), are luxuries which the physician will never require.

As a book of suggestions and rules, it has its field of usefulness, and if one would follow closely the directions regarding the use of the pictures, he will get a working knowledge of the commoner lesions of the posterior segment, which is all the author claims for it. The book-making including the colour work is about up to the average standard, which is perhaps all one should expect. F. C. T.

**The Prescriber.** A monthly journal devoted to Therapeutics and Treatment. Annual Subscription, 20s. Single copies, 2s. Edinburgh, 6 South Charlotte St. Canadian Agents, McAlinsh and Co.

The October number of *The Prescriber* is devoted to the subject of Endocrinology and deals specifically with the thyroid and parathyroids. In addition to editorial articles upon these glands there are several excellent original communications covering special aspects of thyroid and parathyroid therapy. The tests for thyroid activity are detailed in a manner to make them clearly understood and there is a good presentation of how to prescribe the glands in practice. A valuable feature of the number is the section of abstracts from recent literature. For reference there is a good working list of the important books on the thyroid gland and a bibliographic index of the literature of 1921-22.

The editor is to be congratulated upon this special number which is quite up to the standard of *The Prescriber's* other special numbers of recent years. It forms a splendid reference work for the physician, and its perusal will place him *au fait* with thyroid and parathyroid therapy. Surgical treatment and technique are not discussed. Graves' disease appears to be considered more and more a medical rather than a surgical disease.

J. H. E.

**Ophthalmic Surgery** By Major V. Nesfield, F.R.C.S., 172 pages with 22 illustrations, price 9s. net. Published by H. K. Lewis Co., 28 Gower Place, London, 1922.

This small volume has provided for me the most delightful reading of surgery, I have enjoyed for many a day. In its one hundred and sixty pages are condensed ideas crystallized out of years of very extensive surgical practice in India. The author just talks to us; has the rare faculty of making himself present while we listen, for one seems to read these pages with his ears. Then he speaks out with conviction; all through the book is found the spirit shown in the remark regarding treatment of advancing infective corneal ulceration, 'The division of the base of the ulcer (Sarmisch's section) is wrong, and very unsound practice, etc.' You will not agree with all he says, but therein lies much of the charm of the book. You will meet a man who has ideas of his own; in his preface he says, 'the work will be found somewhat unorthodox'.

The work of the publisher is almost beyond compare; the paper, type, and spacing are ideal; the book is light in the hand, the binding substantial and attractive, and one wonders why all medical books are not published after so excellent a model.

F. C. T.

**Encephalitis Lethargica** By Dr. Achard, Professor of Clinical Medicine in the Faculty of Medicine of Paris, one volume, 324 pages with 15 illustrations, 16 francs. (Librairie J. B. Balliere et fils, editeurs, a Paris, 19 Rue HauteFenille).

This book, by Dr. Achard is the most extensive and complete work published on this terrible and baffling malady and merits the study of every physician—and we trust than an English edition will be made available so that its wealth of clinical observations and reasoned con-



clusions may be at the disposal of a wider circle of students. The table of contents is as follows: 1. History. 2. Study of the Symptoms. 3. Clinical aspects and progress of the malady. 4. The lesions of the malady and the interpretation of the symptoms. 5. The virus and its propagation. 6. The comparison of encephalitis lethargica with other morbid states. 7. Diagnosis. 8. Prognosis. 9. Treatment. 10. Bibliography.

In the study of the Symptoms—Chapter 2, the author emphasizes the clinical diversity of the manifestations of the disease—not only in the course of different cases but during the progressive stages of individual cases; among these, however, are always in the first rank the nervous phenomena—psychic, motor and sensory.

The psychic symptoms include somnolence, often profound but often and characteristically, so light that the patient responds to questions uttered in a loud voice: or the ambulatory type where the patient follows his ordinary occupation, but falls asleep at intervals when resting. In vivid distinction are cases recited, falling into a narcolepsy while playing the violin or while writing a letter. Another type is graphically described as "l'etonnement." "The patient is not asleep; he has his eyes open, and is capable even of sitting up, of holding the head erect, but he remains immobile, his features as if fixed: his physiognomy gives the impression of a mask, his eyelids drooping, his eyes do not follow articles moved before him: and, nevertheless he understands what is said to him and can recount it when he recovers his faculties." Sometimes it is not depression but excitement, delirium, agitation, which are present, but these are usually associated with torpor, though cases of frank mania even suicidal or resembling Karsahoff's Syndrome or delirium tremens are found with true hallucinations. The motor troubles include notably ocular paralysis, most frequently of the third pair, ptosis, strabismus and dylopia, less commonly nystagmus, mydriasis, inequality of pupils, paralysis of accommodation, Argyll-Robertson pupil. The author has found such paralysis present in seventy-five per cent. of cases and believes that even a larger proportion would be found if all cases were seen in the early stages. Other paralyses are of the seventh pair, the muscles of the neck, hemiplegias and paraplegias incomplete or complete, hypotony of the muscular system reminiscent of tabes and with diminution of faradic excitability.

The clinical aspects are illustrated by the full description of a great number of cases in which every possible type is cited, the limits of space forbid quotation, but the pathological findings are of great importance.

In the gross, meningeal haemorrhages while found are not common, while suffusion is frequent; in the brain are petechial haemorrhages and reddening of the choroid plexus, the site is most often in the bulb, about the aque duct of Sylvius and in the neighbourhood of the locus niger. Microscopically are found vascular and perivascular lesions, chiefly as Marinesco has noted, on the venous side of the capillary field with masses of cells, lymphocytes in the majority, but also mononuclears, plasmocytes and fibroblasts, cells containing a mass of central chromatin and plasmatic bodies staining with unna's blue. In the vicinity of the vessels may be seen degenerated myelin and cells bearing sudanophila fat, and blood pigment in macrophages, the lesions again showing a predilection for the locus niger which may be decolorized and for the grey nuclei of the nerves. A very complete study is made of the relation of the lesions to the symptoms and the site of election of the lesions in the anatomical structure of the brain which is most illuminating to the clinician as well as to the pathologist, but is too extensive for condensation here.

Experimentation has proved the existence of a filtrable virus, virulent for the rabbit and some other animals, which may be derived from the brain, an active virus has also been obtained from the nasopharyngeal secretions which gives support to the theory that the path of infection is through the upper air passages and supports the clinical observation that the malady is frequently preceded by marked coryza and catarrh and the author concludes that there is a primary septicalmis phase of an organism with a predilection for the nervous structures, as in syphilis, trypanosomiasis and sleeping sickness. The epidemiology of the disease is discussed and while admitting that its contagion is limited, probably existing only in the primary stage, yet a number of striking examples are quoted where it has been disseminated, Netter quoting 114 families with at least two cases in each.

The chapter on treatment contains nothing encouraging, the value of the serum of convalescents is doubtful and it may well be dangerous in spite of the proof of active inhibition in animal experiments of corneal implantation. The use of other sera, foreign proteins, subcutaneous injection of milk, etc., have not been attended with constant success; the formation of a local abscess by the injection of turpentine is mentioned and the use of a variety of sedatives, but the amelioration claimed in some cases has not been found in other and we still await a reliable means of combatting, this most alarming recruit to the armies of death.

A. J. M.

**Improvements in Preoperative and Post-operative Care.**—The essential point made by F. B. Taylor, W. I. Terry and W. C. Alvarez, San Francisco, is that in a large hospital with young and inexperienced house officers, the standing orders should call for as little meddlesome interference as possible. If any patient develops symptoms which require the use of purges or enemas, they can always be prescribed; but they should not be made compulsory for the patient who is convalescing smoothly and rapidly. Furthermore, the standing orders must not be such that the very life of a man coming in with an acute intestinal obstruction, a perforating appendix or a gangrenous Meckel's diverticulum must depend on the intervention of some intelligent

intern or resident. The salient points in the treatment endorsed by the authors are: (1) The omission of the preoperative purge had no definite influence on the amount of vomiting, but it had a decided effect on the amount of pain in the abdominal cases, reducing its incidence from seventy-five to forty-two per cent.; (2) the delay in giving the postoperative purge had a decided effect on the amount of vomiting, reducing its incidence from forty-five to thirty per cent. in the abdominal group, and from twenty to forty per cent. in the extra-abdominal group; (3) in both groups, there was more complaint of pain when the postoperative purges and enemas were withheld.—*Jour. Am. Med. Assoc.*, November 4th, 1922.



## Books Received

- The Cleveland Hospital and Health Survey.** Published by the Cleveland Hospital Council, 602 Electric Building, Cleveland, Ohio.
- Syphilis** By Burton Peter Thom, M.D. 525 pages, with 69 engravings. Price, \$5.50. Published by Lea and Febiger, Philadelphia and New York, 1922.
- Ophthalmic Surgery** By Major V. Nesfield, F.R.C.S. 172 pages, with 22 illustrations. Price, 9s. net. Published by H. K. Lewis and Co., 28 Gower Place, London, W.C.1., 1922.
- Diseases of the Heart.** A hand book for students and practitioners. By I. Harris, M.D., L.R.C.P. (Ed.) 196 pages, with 50 figures in the text, price 10/6 net. Published by Bailliere, Tindall and Cox, 8 Henrietta Street, Covent Garden, London, Eng.
- Medical History of the War—Medical Services: General History** Volume 1. Edited by Major General Sir W. G. MacPherson, K.C.M.G., C.B., LL.D. Published by His Majesty's Stationery Office, Princes Street, Westminster, S.W.1.
- Stedman's Medical Dictionary.** By Thomas Lathrop Stedman, A.M., M.D., seventh revised edition. Illustrated. Price \$7.00 net. Published by Messrs. William Wood and Company, 51 Fifth Avenue, New York.
- Medical History of the War—Medical Services: Diseases of the War—Volume 1.** Edited by Major Gen. Sir W. G. MacPherson, K.C.M.G., C.B., Major General Sir W. P. Herringham, K.C.M.G., C.B., Colonel T. R. Elliott, C.B.E., D.S.O., and Lieut. Col. A. Balfour, C.B., C.M.G. Price, 22 shillings. Published by His Majesty's Stationery Office, Princes Street, Westminster, S.W.1.
- A Text Book on Minor Surgery** By John C. Vaughan, M.D., and Athel Campbell Burnham, M.D. 605 pages, illustrated with 459 engravings. Price, \$7.75. Published by Lea and Febiger, Philadelphia and New York, 1922.
- Pulmonary Tuberculosis** By Maurice Fishberg, M.D. Third edition, revised and enlarged. 891 pages, illustrated with 129 engravings and 28 plates. Price, \$8.50. Published by Lea and Febiger, Philadelphia and New York, 1922.
- Lessons in Pathological Histology** By Gustave Roussy and Ivan Bertrand. Translated from the second French edition by Joseph McFarland, M.D., Sc.D. 278 pages, illustrated with 124 engravings. Price, \$3.25. Published by Lea and Febiger, Philadelphia and New York, 1922.
- A Practical Hand Book on the Diseases of Children.** By Bernard Myers, C.M.G., M.D., M.R.C.P. 548 pages, with 61 illustrations. Price, 21s. net. Published by H. K. Lewis and Co., 28 Gower Place, London, W.C.1., 1922.
- Lawson Tait—His Life and Work** A contribution to the history of abdominal surgery and gynaecology. By W. J. Stewart McKay, M.B., M.Ch., B.Sc. 578 pages, 34 plates. Price, 25s. Published by Bailliere, Tindall and Cox, 8 Henrietta Street, Covent Garden, London.
- Medical History of the War—Medical Services: Surgery of the War** Volume 1. Edited by Major General W. G. MacPherson, K.C.M.G., C.B., LL.D., Major General Sir A. A. Bowlby, K.C.B., K.C.M.G., K.C.V.O., Major General Sir Cuthbert Wallace, K.C.M.G., C.B., and Colonel Sir Crisp English, K.C.M.G. Price, 26 sh. Published by His Majesty's Stationery Office, Princes Street, Westminster, S.W.1.

**Value of Rest in Cases of Empyema and Lung Abscess.**—J. S. Pritchard, Battle Creek, Mich., endorses the value of other methods of treatment of empyema and lung abscess, such as postural treatment, pneumothorax, irrigation, vaccine, medication, artificial light therapy and surgery; but, he asserts, with the addition of rest and hygienic treatment, more gratifying results may be obtained. Many nontuberculous conditions of the lungs and pleura may be greatly benefitted if the patient is given the rest regimen now employed in cases of acute pulmonary tuberculosis. In the series of twenty-one cases of pulmonary abscess (acute and chronic) reported by Pritchard, ten followed tonsillectomy under general anaesthesia. He is convinced that a more prolonged rest in bed following thoracotomy in empyema would result in the development of fewer chronic cases. The rest treat-

ment does not cause the strength of the patient to decrease; it relaxes the nervous system, augments nutrition, and increases the general resistance. Some study may be necessary to reestablish the patient's confidence, but in many instances a recovery from a much more serious affection than pulmonary tuberculosis has taken place.—*Jour. Am. Med. Assoc.*, December 30th, 1922.

#### ESSAYS AND LECTURES ON CLINICAL SURGERY

By DOCTOR A. MACKENZIE FORBES, Clinical Professor of Orthopaedic Surgery, McGill University.

*The Canadian Medical Association Journal says:—*  
"This book is a very readable one. Every page is full of useful information. To the student and to the general practitioner it can be strongly recommended."  
Price \$2.00. For sale by MISS POOLE, 45 McGill College Avenue, Montreal.

**Sexuality in Children.**—Friedjung protests against the prejudices and disregard of one's own childhood experiences in the placid assumption that childhood is asexual or presexual. The tremendous changes at puberty do not come out of nothing; there has been a gradual development up to this stage. He has been collecting material in this line for ten years, and presents examples of three types of erotic manifestations in normal children, those connected with the child's own person, with the person of another, and those in the psychosexual sphere. He includes in the first type, the *autoerotik* the pleasurable sensation which is a factor in the child's sucking the breast. Some infants suck their fingers even a few minutes after birth. The child does not learn to suck to get food, but it gets the milk as an unexpected by-effect of its erotic sensation from the sucking movements. He agrees with Freud that the mouth is one of the erogenous zones, relating an example of thumb-sucking continued into married life, and one of the factors in the divorce. The erotic sensations from rhythmic movements, rocking, etc., belong in this category, as also those connected with defecation and urination. The urethra is another erogenous zone; many cases of enuresis are traceable to this. He has witnessed erection in a 3 weeks' infant, and the daily necessary washing of the genitals attracts the infant's attention to this region. If the cleansing is neglected, then itching and smarting have the same effect. Perhaps, he suggests, it is a functional necessity for the attention to be called early to this biologically important organ. He gives instances of habitual onanism in infants of 9 and 13 months, and says that as the children grow older and are chided for it, they merely become secretive, both girls and boys. He has never seen any severe injury result from the masturbation which is so frequent preceding puberty. He gives a number of examples of *heteroerotik*, including the case of a boy of 3½ with erections when taken into bed with his young mother, and a girl of 2 who, taken into her father's bed, hugged and kissed him and suddenly urinated. A number of instances of Freud's Oedipus complex in very young children are related, and examples showing the craving of children of even 3 and 4 to learn where babies come from. He reiterates in conclusion that all the examples he cites are of normal children whose further development he has followed for years, some into mature

life. Physicians are constantly asked for advice in this field, and they can tranquillize and advise and ward off danger if they do not wilfully close their eyes to experience.—*Zeitschrift für Kinderheilkunde*, Nov. 22nd, 1921.

**Palliative Trephining for Pressure on the Brain.**—Anschütz (Deut. med. Woch., October 20th, 1922, p. 1,406) reviews the results achieved in the fifty cases in which he trephined for the relief of pressure symptoms. He admits that the diagnosis of cerebral tumour is far from easy, and in one of his cases, in which cerebellar trephining was performed for the relief of pressure (cerebro-spinal fluid under a pressure of 700 mm.) and for severe congestion papillitis, the necropsy failed to show any pathological change in the brain. The author classifies his material according to the height of the pressure of the cerebro-spinal fluid: in seven cases it was up to 300 mm., and at the other extreme there were seven cases in which it was over 600 mm. The latter class represented hopeless cases. Among the remaining forty-three cases there were six deaths, one from meningitis. In addition, to these six operative fatalities and six cases which could not be traced, there were ten cases in which the operation gave relief, but death occurred within a year. The author concludes that, though palliative trephining is almost invariably useless when high pressure and coma have lasted some time, it may be strikingly successful in averting blindness and prolonging life when the symptoms are due to slowly growing malignant disease. The results are still better when new growths are of a stationary character, and the author records the case of a man suffering from a glioma the size of a plum in the optic thalamus and a malignant adenoma of the pituitary body. Palliative trephining not only reduced the intracerebral pressure, but restored his eyesight and general working capacity, and it was not till nearly eleven years after the operation that he died from influenzal pneumonia, and the diagnosis of tumour of the brain was confirmed. The author's technique is practically identical with that followed by Cushing for subtemporal trephining.—*Brit. Med. Jour.*, December 16th, 1922.